VASCULAR FLORA AND PLANT COMMUNITIES OF ALLEGHANY COUNTY, NORTH CAROLINA

Derick B. Poindexter[1]

I.W. Carpenter, Jr. Herbarium (BOON)
Appalachian State University, Biology Department
Boone, North Carolina 28608-2027, U.S.A.
poindexterdb@appstate.edu

ABSTRACT

An inventory of the vascular plant species of Alleghany County, North Carolina was conducted from spring 2008–summer 2012. Extensive fieldwork was augmented by a search of numerous herbaria, resulting in the documentation of 1508 taxa (1457 species) in 642 genera and 161 families. These taxa are represented by nine Lycopodiophyta, 39 Monilophyta, 23 Acrogymnospermae, and 1437 Angiospermae. Four hundred and thirty-five taxa, 28.8% of the total flora, are considered exotic. Sixty-five native taxa have state or global ranking due to rarity. Ten species are documented here as new to the flora of North Carolina, while 613 are new county distributional records. An additional 38 plausible sight records are included in the annotated checklist to bring attention to their uncertain attribution to the flora; however, these records are not treated in the taxonomic summary. A comparative assessment of all plant origin categories (i.e., native vs. multiple exotic categories) within the flora is included to accommodate the various perspectives of the botanical community. A companion website (www.vascularflora.appstate.edu) was created to provide a dynamic source of digital documentation for this study.

RESUMEN

Se realizó un inventario de las especies de plantas vasculares del condado de Alleghany, Carolina del Norte desde la primavera de 2008 hasta el verano de 2012. El extensivo trabajo de campo de Incrementó con la búsqueda en numerosos herbarios, dando como resultado la documentación de 1508 taxa (1457 especies) en 642 géneros y 161 familias. Estos taxa están representados por 9 Lycopodiophyta, 39 Monilophyta, 23 Acrogymnospermae, 1437 Angiospermae. 435 taxa, 28.8% de la flora total, están consideradas exóticas. 65 taxa nativos están considerados como amenazados a nivel estatal o global debido a su rareza. Se documentan 10 especies como nuevas para la flora de Carolina del Norte, mientras que 613 son citas de distribución en nuevos condados. Se incluyen 38 citas de visu adicionales plausibles en el catálogo anotado para atraer la atención sobre su atribución a la flora; sin embargo, estas citas no se tratan en el resumen taxonómico. Se incluye una evaluación comparativa de las categorías de origen de todas las plantas (ej., nativas vs. múltiples categorías de exóticas) se incluye en la flora para acomodar las diferentes perspectivas de la comunidad botánica. Se ha creado una página web (www.vascularflora.appstate.edu) para aportar una fuente dinámica de documentación digital para este estudio.

INTRODUCTION

Perhaps the most intense effort to document county floras in North Carolina and South Carolina was during the production of the regionally renowned *Manual of the Vascular Flora of the Carolinas* (Radford et al. 1968). This manual was the product of many years of botanical exploration within these contiguous states and its impact was far reaching. It served and continues to serve as a mainstay of taxonomic reference for the flora of this area, and has been made extensible to neighboring states for various studies. However, there are limitations to how much a single, large-scope work can cover regarding the mammoth task of documenting plant distributions. Consequently, few if any counties within the range of Radford et al.'s (1968) original manual can be considered "comprehensively inventoried". Likewise, since its publication much time has passed. Taxonomic revisions, new discoveries, and novel exotic introductions have occurred, thus necessitating a new treatment (e.g., Weakley 2011). In light of global climate change, undiscovered new taxa, an evolving knowledge of vegetation patterns and modern techniques for cataloguing plant diversity data, there is a pervasive and revived need for continued floristic research.

The objectives of this descriptive study were to: 1) document and georeference specimens of the known vascular flora of Alleghany County, North Carolina; 2) describe general plant communities; 3) analyze the flora

[1]UNC Herbarium (NCU), North Carolina Botanical Garden, University of North Carolina, Chapel Hill, North Carolina 27599-3280, U.S.A. poindexter@unc.edu

in context of species richness and origin (i.e., native vs. multiple exotic categories) of taxa; and 4) make voucher data digitally available via a web interface to the botanical and general communities.

THE STUDY SITE

Physiography

Alleghany County, North Carolina is located in the northwest corner of the state, between 36.36° and 36.57°N latitude, and 80.91° and 81.35°W longitude (Fig. 1). The county is the 4th smallest in North Carolina, with a total area of 610 km^2, comprised of 607.7 km^2 of land and 2.3 km^2 water (United States Census Bureau [USCB] 2011a). It is bordered by Surry County to the east, Wilkes County to the south, Ashe County to the west, and Grayson County, Virginia to the north (Fig. 2). The southern and eastern boundary of the county is close to the rim of the Blue Ridge Escarpment and comprises part of the Eastern Continental Divide. This county contains two major river basins, the New River Basin and the Upper Yadkin River Basin. Most tributaries (e.g., Little River, Prathers Creek) in Alleghany County empty into the New River, which ultimately drains into the Gulf of Mexico via the Ohio and Mississippi Rivers. The tributaries associated with the New River watershed drain ca. 93–95% of the county (Padgett 2011). The far southern and eastern portions of Alleghany are the only exception, with relatively few tributaries (e.g., Mitchell River headwaters) draining off of the escarpment into the Upper Yadkin River Basin and eventually emptying into the Atlantic Ocean.

Alleghany County is principally montane. It is located within the Southern Section of the Blue Ridge Physiographic Province (Fenneman 1938) of the Southern Appalachians (Braun 1950), although a small fraction of the southeastern boundary is situated just below the Blue Ridge Escarpment (in the vicinity of Stone Mountain State Park) in the Piedmont Upland Physiographic Province (Fenneman 1938). Topographic variation increases dramatically as the western and northern portions of the county grade into typical high to mid-elevation mountain ridges that are more characteristic of this region (Fig. 2). This physiognomy of the landscape differs somewhat from the highest mountains in northwest North Carolina, which are exemplified by the Amphibolite Mountains Macrosite to the west of Alleghany County in adjacent Ashe and Watauga Counties. Many of the peaks in that area exceed 1500 m in elevation, and possess a prominent northern floristic component typically associated with the inner, high mountains of the Blue Ridge. In contrast, the highest elevation in Alleghany County is Catherine Knob (1272 m), which is part of a chain of peaks that run diagonally northeast through the upper third of the county and contains several other notable peaks (Fender Mountain, 1213 m; Cheek Mountain, 1201 m; Twin Oaks Mountain, 1116 m; and Bald Knob, 1109 m). In addition, there are several outliers to the south and southeast (e.g., Bullhead Mountain, 1171 m; Bluff Mountain, 1139 m; Mahogany Rock, 1103 m; and Green Mountain, 1018 m) that occur primarily adjacent to the edge of the Blue Ridge Escarpment (Fig. 2). Though most of the lower elevation areas in the county occur within the New River drainage and headwaters of the Mitchell River, the minimum elevation occurs around the foot of Stone Mountain (475 m) along the Wilkes County border. Ultimately, this difference in geography and topography, as compared to the predominately higher elevations westward, results in a small reduction in the presence of northern species, but in turn adds some lower elevation species with Piedmont affinities to the vegetation of the county.

Braun (1950) broadly classified the vegetation of Southern Appalachians as a part of the Oak-Chestnut Forest Region, but this area is now more appropriately referred to as the Appalachian Oak Forest Region (Küchler 1964; Stephenson 1993) following the demise of the American chestnut. Despite these general regional classifications, vegetation patterns in Alleghany County are largely a consequence of its highly variable landscape and hydrology that contribute to a wide array of communities including both forested areas and wetlands.

Climate

The continental climate of the southern Appalachians is temperate, humid mesothermal, lacking a distinct dry season (precipitation shows only minor fluctuation), cool to warm summers, and mild to cold winters (Trewartha & Horn 1980). Alleghany County has a wide range of microclimate variation related to its mountainous terrain. Due to incomplete data from the Sparta weather station, Alleghany County climate normals (1971–

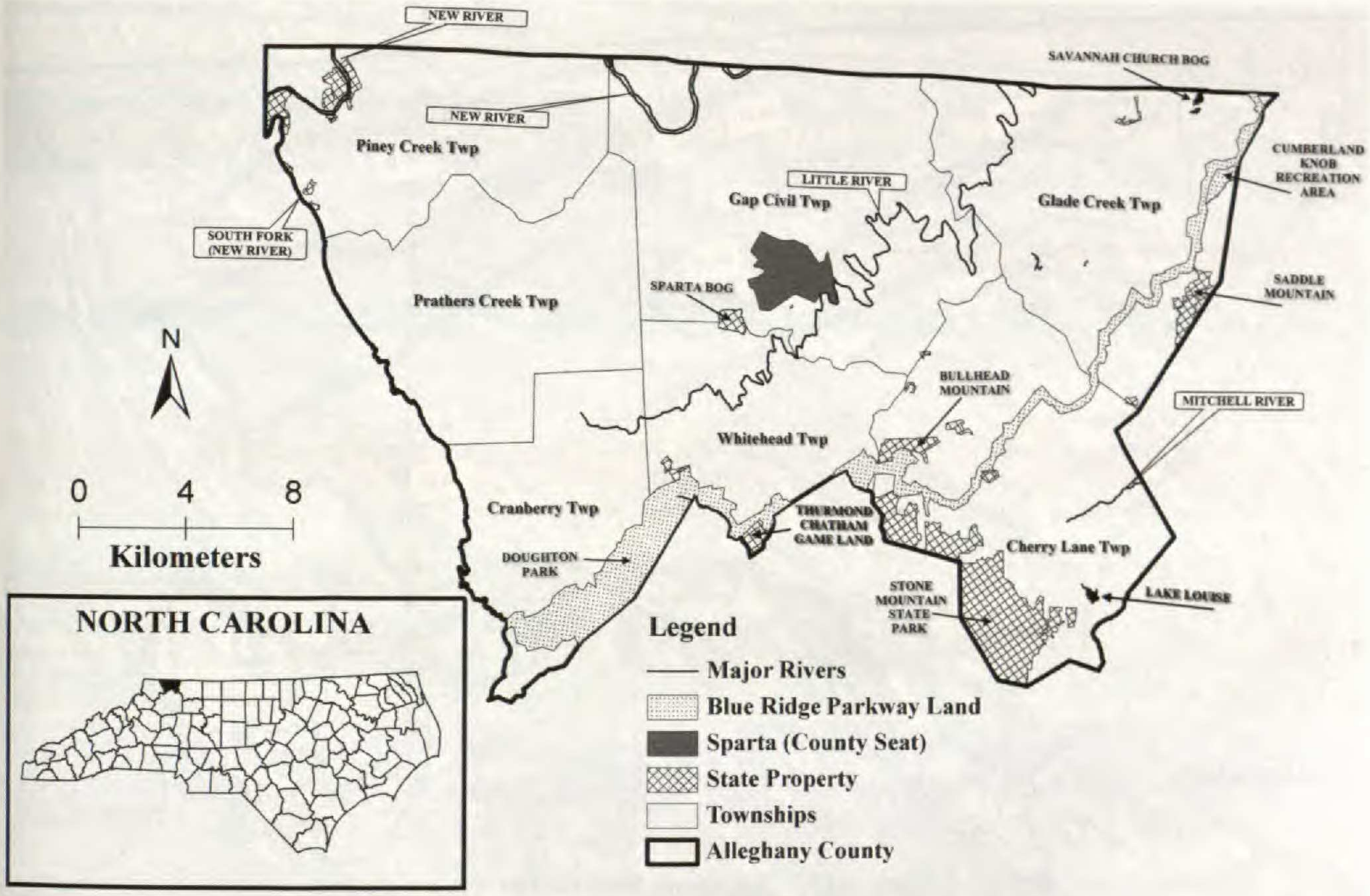

Fig. 1. Map of Alleghany County divided into townships and displaying major river systems, and State and Federally owned lands.

2000) are derived from the Transou weather station in Laurel Springs, Ashe County, located approximately 4.1 km southwest of the Alleghany County line at 36.39°N latitude, 81.30°W longitude, and 876 m elevation. Mean annual precipitation is 144.0 cm with March the highest at 14.2 cm and December the lowest at 9.2 cm, while the mean annual snowfall (based on data from 1946–2009) for this area is 57.9 cm. The mean annual temperature of this area is 9.4°C, with January the coldest month, averaging -1.2°C and July the warmest month at 19.9°C (Southeast Regional Climate Center 2011). Based on data at Transou weather station from 1951–1980, the average length of the growing season is 139 days (Perry 1998a), with the average first fall frost on October 1, and the last spring frost on May 15 (Perry 1998b).

Geology

The geology of the southern Appalachians is a result of a complex history of metamorphism and erosion (Williams 1979; Abbott and Raymond 1984), which is directly responsible for the mosaic of vegetation patterns that occur within this mountain range. Consequently, Alleghany County exhibits a multifaceted geology (Fig. 3) associated with four separate alliances: the Alligator Back Formation, Ashe Formation, Elk Park Plutonic Group, and Spruce Pine Plutonic Group (Rankin et al. 1972; Epenshade et al. 1975; Williams 1979). Most parent material in the county is characterized by the first two metamorphic formations, both of which contain bands of mafic rock, while the latter two groups contribute a less abundant intrusive metamorphosed/igneous component to the bedrock of the area. Mafic rock (amphibolite) is uncommon in the county and is directly associated with rare plant assemblages. Likewise, ultramafic rock, which is also responsible for idiosyncratic vegetation patterns is very rare and localized and will be discussed independently.

The Alligator Back Formation occupies the southeastern third of the county. It is horizontally oriented, running from Laurel Springs northeast to Edmonds. This metamorphic formation is of Precambrian and/or Paleozoic (late Proterozoic) origin. It is primarily comprised of gneiss, with quartzo-feldspathic layers, thin mica, thicker areas of schist, some phyllite, amphibolite and greenstone. Some smaller areas within this forma-

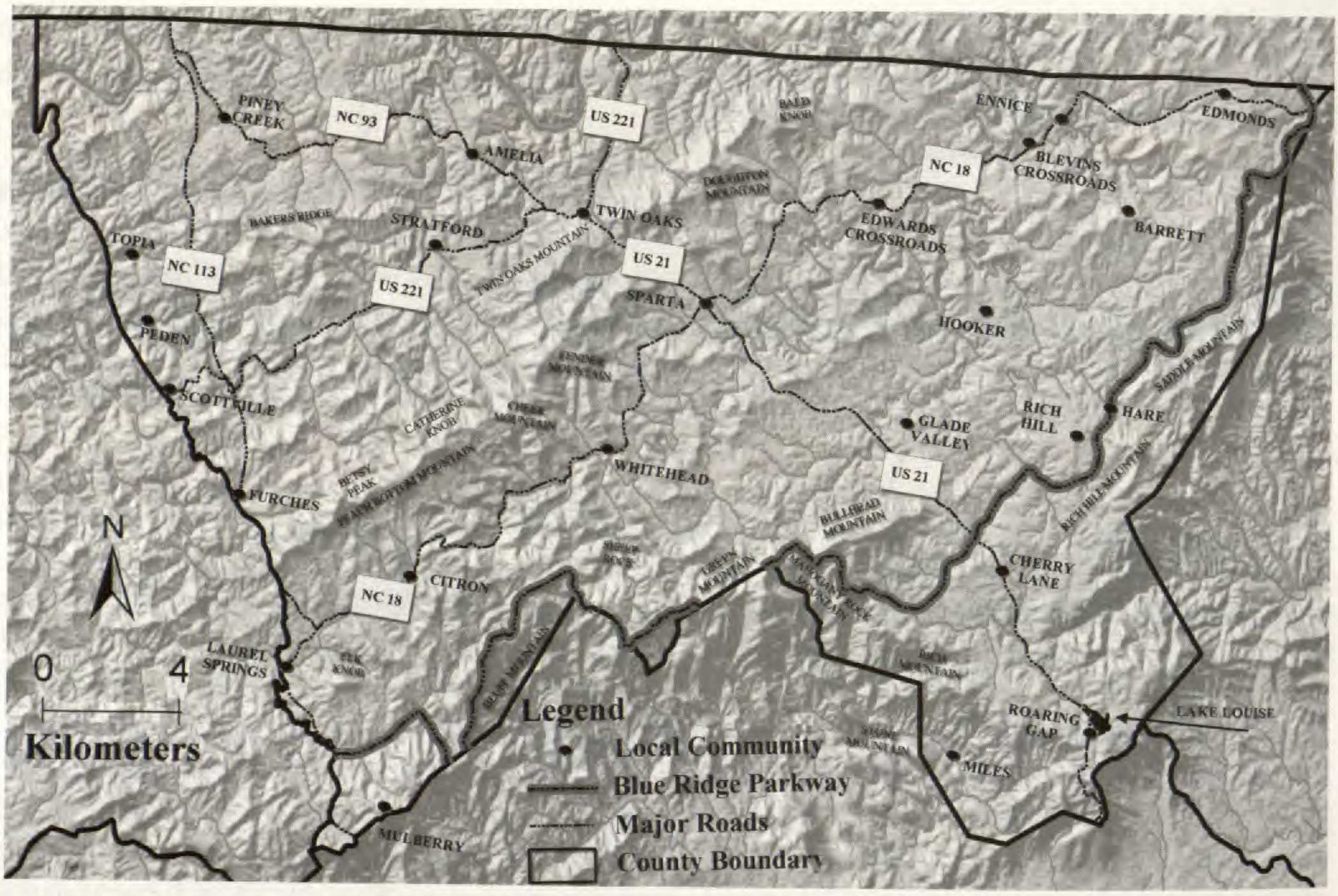

Fig. 2. Topography of Alleghany County, with emphasis on major roads, communities, reservoirs, and peaks.

tion consist of long horizontal bodies dominated by mica schist or phyllite (commonly graphitic) containing garnet and magnetite, interlayered with lesser amounts of biotite-muscovite gneiss and amphibolite. Another area dominated by amphibolite (some garnet based) and greenstone occupies a northeastern oriented sliver, equidistant between Cherry Lane and Roaring Gap (Rankin et al. 1972; Epenshade et al. 1975; USGS 2011).

The Ashe Formation occupies a third to nearly half of the county adjacent to and west of the Alligator Back Formation. It also runs horizontally in a northeast trajectory through the center of Alleghany. This formation encompasses the Peach Bottom Mountain range, Doughton Mountain, the county seat of Sparta, and Stratford. This late Precambrian (late Proterozoic) formation is dominated by rocks that are thinly layered and fine-grained. As mapped by Rankin et al. (1972), Epenshade et al. (1975), and USGS (2011) primary bedrock material is comprised of biotite-muscovite gneiss, with varying amounts of mica schist, phyllite, quartz, feldspar, amphibolite, and hornblende gneiss. Gneiss layers are most common and often very thick. Several long, narrow bands dominated by amphibolite and garnet amphibolite are scattered throughout the formation. These mafic bedrocks are found in areas from Sparta to Ennice, south of Sparta, from Furches northeast to Stratford, near Peden in the same trajectory through Amelia to the Virginia, and as another sliver from the northwest section of the South Fork of the New River, south of Piney Creek and bisecting the northern "loop" of the New River along the northern border of the county (Rankin et al. 1972; Epenshade et al. 1975; USGS 2011).

The Elk Park Plutonic Group or Suite is the second smallest lithologic assemblage in Alleghany County, found in the northwest corner, surrounding Piney Creek and the confluence of the North and South Forks of the New River, along with one section of the New River itself. It is comprised of intermediate Precambrian (mid-Proterozoic), metamorphic and igneous rocks. The largest, most common body of rocks is referable to Cranberry Gneiss (biotite granitic gneiss), containing rocks that range from diorite to granite, with quartz monzonite that often bears biotite. Some hornblende (amphibolite), calc-silicate rock, and marble is present, and sphene and epidote are common (Rankin et al. 1972; Epenshade et al. 1975; USGS 2011)

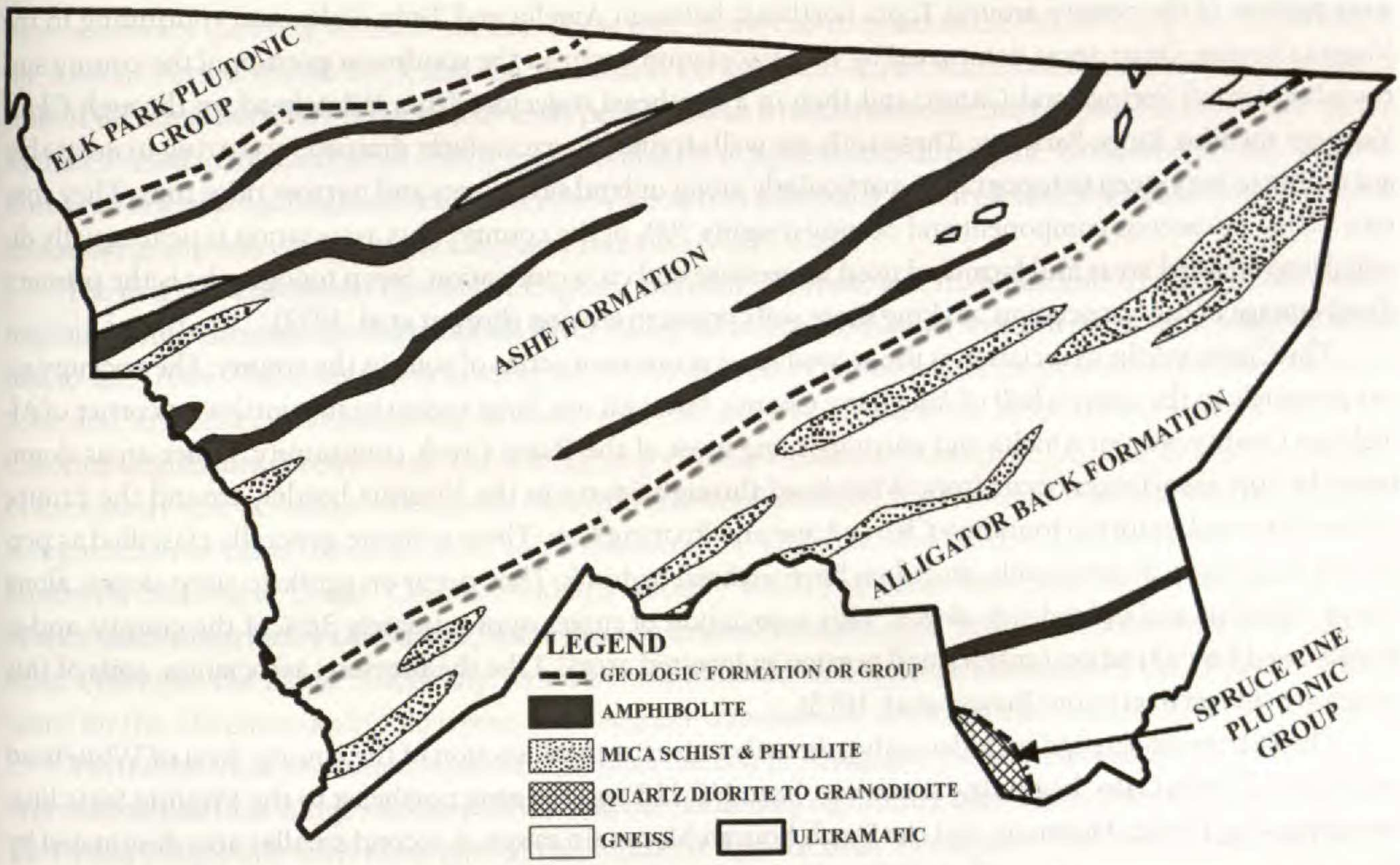

Fig. 3. Generalized geologic map of Alleghany County, adapted from Padgett (2011) and based upon Epenshade et al. (1975) and Rankin et al. (1972).

The Spruce Pine Plutonic Group is restricted to a very small area around Stone Mountain State Park along the western side of the southeast leg of the county. This group of intrusive igneous rocks consists primarily of Paleozoic (Devonian) granitic substrates including quartz diorite, granodiorite, biotite, muscovite, and quartz monzonite, with frequent epidote and local garnet (Rankin et al. 1972; Epenshade et al. 1975; USGS 2011).

The ultramafic metamorphic rocks of this area occur in small bands or pockets within the Ashe Formation. Of these areas, Amelia, Edmonds, and Peden contain the largest consolidated localities for this rare substrate. Likewise, the Edmonds portion extends northeastward into Virginia, constituting one of the largest bodies of ultramafic rock in the southern Appalachians. These ultramafic rocks are of an undetermined Precambrian and/or Paleozoic origin and are exceedingly rich in minerals. Areas containing this rock type consist principally of chlorite-tremolite-magnetite schist with common deposits of either serpentine or talc, and local occurrences of olivine (Rankin et al. 1972; Epenshade et al. 1975; Scotford & Williams 1983). Such bedrock releases abundant minerals upon weathering, and thus often produces habitats that harbor rare plants. Elements (particularly heavy metals) commonly found in ultramafic rock are magnesium, iron, aluminum, calcium, nickel, cobalt, manganese, zinc, copper, and potassium. Those of Alleghany County belong to two types, the Edmonds-type and the Todd-type. Both types are metasomatized, with the Edmonds-type rocks being less altered and found in the eastern half of the county, and the Todd-type in the western half (Scotford & Williams 1983).

Soils

The soils of the county are primarily classified as Ultisols, with a few examples of Inceptisols, and one series with Entisols. Most soils in the county are derived from gneiss and schist, with occasional phyllite and rarely granite. The soil texture is mainly loam to a fine sandy loam, containing varying amounts of mica. The soils of Alleghany County are more specifically partitioned into five main units: the Watauga-Chandler-Fannin association, Chester-Ashe association, Porters association, Clifton association, and Stony steep land association (Brewer et al. 1973).

The Watauga-Chandler-Fannin association is widely distributed, occurring in large areas in the north-

west portion of the county around Topia northeast between Amelia and Twin Oaks, and continuing to the Virginia border. Other areas dominated by this association occur in the southwest portion of the county surrounding Laurel Springs and Citron, and then in a northeast trajectory from Whitehead up through Glade Valley to the Blue Ridge Parkway. These soils are well-drained to excessively drained, occurring in areas that are rolling to very steep in topography, particularly along upland side slopes and narrow ridge tops. They contain a large micaceous component and occupy roughly 39% of the county. This association is near equally divided into forested areas and farmland used for pasture and crop cultivation. Steep topography is the primary disadvantage of this association, making these soils prone to erosion (Brewer et al. 1973).

The Chester-Ashe association is the second most prominent series of soils in the county. They occupy areas primarily in the eastern half of Alleghany County, but with one large region in the northwest corner of Alleghany County west of Amelia and encompassing most of the Piney Creek community. Other areas dominated by this association occur from Whitehead through Sparta to the Virginia border, around the Ennice community, and south surrounding Cherry Lane and Roaring Gap. These soils are generally classified as permeable to excessively permeable, and often have surficial bedrock. They occur on gentle to steep slopes, along broad ridgetops and upland side slopes. This association occupies approximately 36% of the county, and is mostly used for cultivation (only a small portion in forested areas). Like the previous association, soils of this group are subject to erosion (Brewer et al. 1973).

The Porters association includes soils primarily in west-central section of the county, west of Whitehead and south of Twin Oaks, beginning southwest from NC 113 and running northeast to the Virginia State line, encompassing Fender Mountain and the Peach Bottom Mountain range. A second smaller area dominated by this association occurs south of Glade Valley along the northern side of Bullhead Mountain. Soils of the Porters association tend to be well-drained and occur on strong to very steep side slopes and narrow ridges of the higher elevation areas in the county. This association occupies about 12% of the land in Alleghany County, much of which is forested. The rugged topography dominated by this association makes agriculture difficult in these areas, coupled with bedrock that is near the soil surface. Likewise, cultivation within this association is not practical due to a high probability of erosion (Brewer et al. 1973).

The Clifton association is comprised of soils mainly in the north and northwestern portions of the county. They occur in small bands, specifically around Peden northeast to Stratford, more or less parallel to US 221 and terminating just south of NC 93. This band continues along this trajectory on the north side of NC 93 until reaching the Virginia border. The only other area where this association is found is around the Edwards Crossroads community and northeastward. Soils of this series are relatively well-drained. The Clifton association is found in rolling to somewhat steep sites, along rather broad ridgelines and upland slopes. These soils are the least common in the county, occupying about 6% of the land area with half in forest and half in cultivation. Like the previous associations, these soils have a limited farming capacity due to steep topography and surficial bedrock (Brewer et al. 1973).

The Stony steep land association is found mainly along the rim of the Blue Ridge Escarpment, in the extreme southern, southeastern, and northeastern portions of the county. These areas are adjacent to Wilkes and Surry Counties. Soils of this association are very rocky with exposed bedrock, and generally occur on very narrow ridgetops and steep side slopes, with especially narrow drainage ways. Most of this land belongs to the Blue Ridge Parkway, and is thus relatively undisturbed. Likewise, the steep topography and unsuitable soils make it non-conducive for agriculture. Approximately 7% of the county is occupied by this association, with roughly 90% of it consisting of forested areas (Brewer et al. 1973).

History and Special Features

The first known inhabitants of Alleghany County were Native Americans. Relictual evidence and other artifacts suggests that these cultures were present near the beginning of the Hypsithermal period, at the end of last Pleistocene Glaciation, approximately 10,000 years ago (Alleghany Historical-Genealogical Society [AHGS] 1983). Three major divisions are recognized based on the progressively more advanced implements found in the county, that ultimately resulted in a transition from a nomadic (seasonal hunting migration) lifestyle to

more sedentary (farming infused) society. These time frames correspond to the Paleo Period (ca. 10,000 B.C.), the Archaic Period (8,000 B.C.), and the Woodland Period (ca. 0–1,700 A.D.). Interestingly, there was also a shift in the areas normally inhabited by early peoples, with a transition from ridge top and uplands during the Archaic Period to lowland areas (likely more conducive to agriculture) during the Woodland Period. The first European settlers that migrated into what is now known as Alleghany County found few native Americans, but this small group was comprised of Cherokee Indians (AHGS 1983).

The original Europeans (mostly of English, German, Scottish, and Irish descent) to inhabit this county migrated south through the Shenandoah River Valley, as well as from other western portions of Virginia in the mid to late 1700s. This county was initially part of a larger Ashe County before its separation from northeastern Ashe and subsequent establishment as a new political entity by an act of the 1858–1859 session of the North Carolina Legislature (Brewer et al. 1973; Alleghany County Historical Committee [ACHC] 1976). The location of the county seat of Sparta was heavily debated for several years during the Civil War, and was not formally recognized in its central locality until 1866, following the donation of 20.2 ha of land by James Parks, David Landreth, and David Evans. County residents initially wanted to name this home for county government "Parks" after the primary land donor, but instead he insisted on naming it "Sparta" after the ancient Greek city-state. Likewise, the name "Alleghany" is purported to be derived from an alteration of the Delaware Indian name for the Allegheny and Ohio rivers, and allegedly translates as "a fine stream" (ACHC 1976; AHGS 1983).

Two of the most important features of human interest in Alleghany County include the Federally owned and maintained Blue Ridge Parkway (BRP), and the nationally significant New River. The BRP serves as a scenic byway diagonally traversing part of the southern Appalachian Mountains. The lands preserved by the parkway are of substantial importance due to the habitats they preserve. The first section of the BRP was built at Cumberland Knob in Alleghany County between 1935 and 1939 (Penny 2010). Over the past couple of years, the historic rock walls serving as roadside barriers and complimenting the natural aesthetics of this roadway have been restored. Similarly, the New River is a natural physical element of the county of great interest. The New River is part of the Ohio River watershed and is a tributary of the Kanawha River. It is believed by many to be one of the oldest rivers in the world, with its origin predating the Appalachian Mountains. Due to its unique nature, it is considered one of the nation's American Heritage Rivers. This river not only provides a source of recreation and beauty in the county, but also is rather pristine and serves as a sanctuary to many rare plants and animals.

Land Use

Alleghany County is primarily a rural area with an economy driven by agriculture. According to the 2007 agricultural census (North Carolina Department of Agriculture and Consumer Services [NCDACS] 2012a), approximately 310.2 km2 (51.0% of the total land area) of this county is used for farmland. Some of the major agricultural products for this county include Christmas trees (2nd leading producer in the state), burley tobacco (5th in the state), corn for silage (3rd in the state), and milk cows (4th in the state) (NCDACS 2012a, 2012b). Boxwoods (*Buxus* spp.) are also planted in large quantity in the county, although this horticultural crop is apparently not a major commodity and thus is not monitored by the North Carolina Department of Agriculture (pers. obs.). This high level of agriculture-driven land use has led to a very fragmented and highly altered landscape in the county.

Like many rural counties, Alleghany contains many small, local communities. Many of these communities have greatly dissipated over time and are hardly recognized currently, however the historical and current presence of these areas of human aggregation are important as they define centers of concentrated anthropogenic influence. Many of the larger extant communities (including the county seat of Sparta) are located along or near major roadways and include Cherry Lane, Edmonds, Ennice, Glade Valley, Piney Creek, Roaring Gap, Stratford, Twin Oaks, and Whitehead (Fig. 2).

In 1880, nearly 20 years after its formal establishment, Alleghany County had a population of 5,486 people (Brewer et al. 1973). Based on the 2010 U.S. Census Bureau data (USCB 2012), Alleghany has an estimated population size of 11,155 people, making it the 7th smallest in the state.

Major Collectors and Floristic Studies

The first plant collections known to the author from Alleghany County, based on herbarium specimens, were in the early 1900s. Fieldwork in the county (as well as North Carolina in general) peaked during the 1950s and 1960s during the production of the *Manual of the Vascular Flora of the Carolinas* (Radford et al. 1968). Two M.S. theses were conducted in Alleghany County, either as a site within the confines of the County's political boundaries (Bullhead Mountain, Michael 1969) or as a site that overlapped the boundary with a neighboring county (Stone Mountain State Park, Taggart 1973, 1976). In the last decade, there have been only a few other published works pertaining to newly documented plants in Alleghany County (Poindexter 2006, 2008; Denslow & Poindexter 2009; Poindexter 2010a, 2010b; Poindexter & Lance 2011; Poindexter & Nelson 2011; Poindexter et al. 2011). Botanists and avid collectors that have made significant contributions to the knowledge of floristic diversity in this county within the last 50 years include A.E. Radford, J.B. Taggart, J.L. Mackay, J.L. Michael, and county natives P.D. McMillan and myself.

METHODS

Specimens were collected from the spring of 2008 through the summer of 2012. Despite the presence of preexisting vouchers, an attempt was made to recollect all known taxa to produce the most up-to-date records possible. This documentation effort was augmented by herbarium searches for additional vouchers. The full collection at Appalachian State University (BOON) was examined, while other herbaria were targeted for specific records based on database and/or literature searches. These herbaria included: Catawba College, Clemson University (CLEMS), Duke University (DUKE), Mecklenburg County Park and Recreation (UNCC), North Carolina State Museum of Natural Sciences, University of Missouri (UMO), North Carolina State University (NCSC), University of North Carolina-Chapel Hill (NCU), University of South Carolina-Columbia (USCH), and Virginia Tech (VPI). All specimens were examined for accuracy and annotated.

Weakley (2011) was the primary source for plant identification and nomenclature (exceptions are addressed separately). Other manuals consulted include: Bailey (1924), Bailey and Bailey (1976), FNA (1993+), Fernald (1950), Gleason and Cronquist (1991), Radford et al. (1968), Rehder (1937), Small (1933), Stace (2010), and Wofford (1989). Decisions regarding alien species inclusion followed a liberal philosophy (see Poindexter et al. 2011; Weakley 2011), whereby all exotic plants that are either naturalized or demonstrate the ability to migrate from an origin of cultivation or inadvertent seeding (e.g., adventives/waifs, escapes) are considered part of the flora. This inclusive approach acknowledges that establishment is not easily determined, and the most pragmatic solution is to recognize all unmanaged taxa for monitoring purposes. In addition to this approach, taxa that are derived from cultivation but are commonly persistent (particularly around old homesites) or planted with such regularity that they are perpetual agroeconomic elements of the county flora (e.g., *Abies fraseri*) were also documented. In general, all other cultivated taxa that were demonstrably maintained through human interaction and not spreading were not vouchered.

The following terminology was applied to taxa not indigenous to the eastern United Stated and native cultivated species as adapted from Poindexter and Murrell (2008): *exotic* = any nonnative taxon considered naturalized unless otherwise noted; *invasive* = naturalized exotics capable of becoming dominant in an area and regularly invade natural and disturbed habitats; *adventive* = unintentional and sporadic introductions of generally short-lived (i.e., annual) exotic taxa; *native persistent from cultivation* = intentionally planted persistent species that are native to the eastern United States, but not necessarily to the study area; *exotic persistent from cultivation* = planted and established (i.e., surviving for several years) but not spreading; and *escaped* = generally perennial taxa (including both exotic and planted natives) that appear to weakly spread from cultivation and may possibly become established. Taxa were determined to be invasive in the southeast based on the Southeast Exotic Plant Pest Council ([SE-EPPC] 2012). This list was followed closely, except in a few rare cases where nativity is questionable (e.g., *Solanum carolinense* var. *carolinense*).

Putative assignments for county and state records were determined based on Radford et al. (1968), Flora of the Southeast atlas (FSE 2012), FNA (1993+), Kartesz (2012), and the PLANTS Database (United States De-

partment of Agriculture, Natural Resources Conservation Service [USDA, NRCS] 2012). State records originating from Alleghany County in other recently published literature (e.g., Poindexter et al. 2011; Rothrock et al. 2011) were also noted. State and global rarity was accessed for each taxon based on the North Carolina Natural Heritage Program (Buchanan & Finnegan 2010). "Significantly Rare" and "Watch List" species were reported to the North Carolina Natural Heritage Program to promote conservation efforts. Taxa that were simply persistent from cultivation were not considered as county or state records. Likewise, persistent or weakly escaped cultivated natives were not assessed for rarity.

The full set of voucher specimens from this study was deposited in the Appalachian State University Herbarium (BOON), with a limited set at the UNC-Chapel Hill Herbarium (NCU), and a partial duplicate set of *Carex* at the New York Botanical Garden (NY). Additional select duplicates were sent to various institutions and may be located in the customized online database described below.

All specimens were georeferenced with a handheld Garmin™ GPSMAP 60Cx unit as they were collected, using WGS 84 as the reference datum. Legacy specimens from other herbaria that lacked GPS coordinates were assigned an estimated coordinate using Google Earth ™ and an existing knowledge of the geographical and ecological attributes of the county. This heuristic method was employed, rather than utilizing less precise georeferencing software, to increase location accuracy. The flora was digitized and used to create an online searchable database of specimens and their respective repositories, select field images, and associated label data. Certain specimen locality data (but not images) were blocked due to land ownership or conservation concerns. This tool was generated as a companion outlet for the extensive amount of floristic information that does not traditionally occur in manuscripts. It was also created to help the general public, land managers, educators, and researchers better understand the flora, and possibly add to our knowledge of the county's vascular plant diversity (via new additions and annotations/corrections) in the future. This website can be accessed at www.vascularflora.appstate.edu (Poindexter 2012). Search filters are also provided in this database for specimens associated with the Blue Ridge Parkway, as well as for vouchers corresponding to an ancillary biocontrol study focusing on the vegetation dynamics and management of *Persicaria perfoliata* within the county. A downloadable copy of the annotated list (vouchered taxa only) in Microsoft Excel ® format is also provided on the website to allow for data parsing and integration by researchers.

Species richness was evaluated for the Alleghany County flora using multiple power models. A conservative approach was taken, utilizing species numbers (rather than total taxa) to safely compare at the same level of taxonomic resolution. These models are represented as $S = cA^z$, where S = the number of expected species for a given area (A), c = the y-intercept or constant, and z = the slope or z coefficient. Area (A) units are in number of hectares. This model is also accompanied by a coefficient of determination (r^2), which ranges from 0 to 1 and describes how well a regression line fits the data. Values closer to 1 indicate a better fit. Three unpublished models, based on data from the FloraS of North America Project (the "S" symbolically distinguishes this project from the similar-sounding "Flora" of North America Project; http://botany.okstate.edu/floras/index.html), were supplied by M.W. Denslow (Appalachian State University, two North Carolina models) and M.W. Palmer (Oklahoma State University, one continental United States model). The first model was broadly inclusive for the North Carolina Mainland (including all physiographic provinces and excluding barrier islands; $S = 130.30A^{0.154}$, $r^2 = 0.443$), and the second model was based exclusively on floras from the mountains of North Carolina ($S = 76.10A^{0.210}$, $r^2 = 0.537$). The latter broad-scale model for the continental United States was based on 3600 floras ($S = 106.44A^{0.16042}$, $r^2 = 0.557$). In addition, published models from the Cumberland Plateau (Huskins & Shaw 2010; $S = 82.12A^{0.2613}$, $r^2 = 0.780$) and two models from the Mixed and Western Mesophytic forest region (Wade and Thompson 1991 [$S = 272.10A^{0.113}$, $r^2 = 0.802$]; Huskins and Shaw 2010, corrected model [$S = 260.82A^{0.1164}$, $r^2 = 0.769$]) were assessed.

Plant communities were delineated through field reconnaissance and collections, as well as the evaluation of several physical parameters, including general topography, aspect, moisture regimes, soil and geology, dominant species, anthropogenic influence, and general vegetation composition. This study relies heavily on these personal observations in conjunction with the North Carolina Natural Heritage Program Significant

Natural Heritage Inventory (Padgett 2011). Likewise, habitat affinities were derived for each taxon (where applicable) by using the PLANTS Database (USDA, NRCS 2012) to assign wetland indicator status (based on the 1988 list). This method was employed to qualitatively ascertain additional ecological patterns within the flora. Modern techniques and current flora writing standards (e.g., Palmer et al. 1995; Palmer & Richardson 2011) were followed as closely as possible to maximize the utility and accessibility of data within this study.

RESULTS AND DISCUSSION

Taxonomic Summary

Approximately 3754 specimens (including duplicates) were collected by the author. An additional series of ca. 285 specimens were examined from various collectors and institutions (see Methods). A total of 1508 taxa, consisting of 1457 species in 642 genera and 161 families were documented, with only 36 taxon records (mostly historical) attributed to other collectors. These taxa are represented by nine Lycopodiophyta, 39 Monilophyta, 23 Acrogymnospermae, and 1437 Angiospermae (Table 1). The latter clade can be further divided into 412 Monocotyledoneae (Monocots) and 1025 "Dicots" in the traditional sense. This latter informal grouping is non-monophyletic, and to better reflect our current understanding of phylogenetics, it is best subdivided into proper clades. As such, there are two Nymphaeales, 13 Magnoliidae, and 1010 Eudicotyledoneae. The largest families are the Asteraceae (177 taxa), Poaceae (153 taxa), Cyperaceae (120 taxa), Rosaceae (74 taxa), Fabaceae (61 taxa), and Lamiaceae (54 taxa). The most taxa-rich genera are *Carex* (83), *Viola* (24), *Dichanthelium* (19), *Solidago* (16), *Juncus* (14) and *Symphyotrichum* (13). Four hundred and thirty-five taxa, constituting 28.8% of the total flora, are nonnative in the eastern United States, of which 141 (9.4% of total flora) are considered invasive in the southeastern United States (SE-EPPC 2012). This high exotic percentage is most likely the consequence of high levels of disturbance associated with large-scale agricultural practices and residential development.

To best discriminate the various origins of taxa reported in this flora, a quantitative summary of source categories is provided (Table 2). As interpreted, 1408 taxa (1360 species) are naturally/sporadically occurring exotic (including adventive) and native plants. The remaining 100 taxa (97 species) are derived from some cultivated origin. Excluding adventives, the full flora consists of 1382 taxa (1335 species).

A total of 38 additional records are tentatively included in the list (for a total of 1546 taxa, 1495 species) as they have been previously reported by reliable sources, but due to the lack of unequivocal physical evidence in the form of voucher specimens or images, these taxa are not part of the formal taxonomic summary. Likewise many other records have been excluded altogether due to either incorrect determinations or in case of sight records, were highly implausible to occur in the county based on geographical affinities. Twenty-nine records are from the FSE atlas (2012) database, which combines several data sources including Radford et al. (1968), The Carolina Vegetation Survey (http://cvs.bio.unc.edu/), and others. Nine taxa are based on records from the North Carolina Natural Heritage Program (NCNHP 2012). These collective sight records are uniquely denoted within the annotated checklist to avoid confusion.

Rare Taxa, State and County Records, and Other Taxonomic Issues

Sixty-five taxa (Table 3) are currently considered "Significantly Rare" by the North Carolina Natural Heritage Program (Buchanan & Finnegan 2010). Though several species from this county are listed as Federal Species of Concern, no Federally Endangered or Threatened taxa have been documented. An additional category monitored by the North Carolina Heritage Program contains "Watch List" species. This category accommodates taxa that are rare or threatened and demonstrate serious population decline, but are not justifiably worthy of major conservation efforts. Criteria for inclusion in this group range considerably. For instance, some taxa are included because they are rare but secure, regionally rare, rare and poorly known, rare due to severe decline, or simply increasing in rarity as a consequence of commercial exploitation. The flora of Alleghany County currently contains 100 taxa on this list.

Twenty-one state records have been previously published from plants in Alleghany County (Poindexter 2008, 2010a, 2010b; Poindexter & Lance 2011; Poindexter & Nelson 2011; Poindexter et al. 2011). An additional

Table 1. Classification of vouchered vascular plants of Alleghany County, North Carolina.

Major Clade	Families	Genera	Taxa	Native	Exotic	Percent of Total Flora
Lycopodiophyta	**3**	**6**	**9**	**9**	**0**	**0.60**
Monilophyta	**15**	**23**	**39**	**39**	**0**	**2.59**
Acrogymnospermae	**3**	**12**	**23**	**12**	**11**	**1.52**
Angiospermae	**140**	**601**	**1437**	**1013**	**424**	**95.29**
Monocotyledoneae	31	143	412	320	92	27.32
Nymphaeales	1	2	2	2	0	0.13
Magnoliidae	4	9	13	12	1	0.86
Eudicotyledoneae	104	446	1010	679	331	67.98
Totals:	**161**	**642**	**1508**	**1073**	**435**	**100.00**

Table 2. Comparative assessment of the origin of plants comprising the vascular flora of Alleghany County, North Carolina.

Origin	Number of Taxa	Number of Species	Percent of Flora*
Subcategories			
* = Naturalized Exotic	193	188	12.8 [0.1]
** = Invasive Exotic	138	135	9.2 [0.1]
‡ = Adventive Exotic	26	25	1.7 [0]
† = Exotic Persistent From Cultivation	39	39	2.6 [0.1]
∞ =Exotic Escaped From Cultivation	36	36	2.4 [0.1]
□ =Invasive Escaped From Cultivation	3	2	0.2 [-0.1]
Δ = Native Persistent From Cultivation	10	8	0.7 [-0.1]
^ =Native Escaped From Cultivation	12	12	0.8 [0]
All Plants of Cultivated Origin	100	97	6.6 [0]
Primary Categories			
Exotic	435	425	28.8 [0.3]
Invasive (naturalized and escaped)	141	137	9.4 [0.1]
Exotic (non-cultivated)	357	348	23.7 [0.2]
Exotic (non-cultivated and non-adventive)	331	323	21.9 [0.2]
Native	1073	1032	71.2 [-0.3]
Native (non-cultivated)	1051	1012	69.7 [-0.2]
Exotic + Native (non-cultivated)	1408	1360	93.4 [0]
Exotic + Native (non-cultivated and non-adventive)	1382	1335	91.6 [0]
TOTAL	**1508**	**1457**	

*Note: Percent of flora is based on total taxa at the species-level or below, with deviation from this value based on species only in brackets.

ten new records are included here for a total of 31 taxa recently documented as new to North Carolina from this area. These taxa include *Campanula punctata, Carex aestivaliformis, Crocus vernus, C. tommasianus, Euphorbia dulcis, Nymphoides peltata, Ribes hirtellum, Saponaria ocymoides, Stellaria longifolia,* and *Viburnum dilatatum*. Most of these records represent weakly spreading taxa from cultivation and a few native taxa. Six hundred and thirteen taxa (40.6% of the total flora) are new additions to the known vascular plant diversity of Alleghany County. Of these, 266 taxa are exotic (43.4% of the total county records) and 347 are native (56.6%).

Stachys appalachiana was recently described from neighboring Ashe County (Poindexter & Nelson 2011), and Alleghany is the only county in North Carolina (and one of only two globally) that has a confirmed extant population of this species. Likewise, a rare hybrid orchid, *Liparis ×jonesii* (*L. liliifolia* × *L. loeselii*), was originally described from this county (Bentley 2000), as was *Monotropsis lehmaniae* Burnham (Burnham 1906), which is currently considered a synonym of *M. odorata*. Several putative new taxa (though not necessarily endemic to Alleghany County) within various genera including *Carex*, *Erigeron*, and *Symphyotrichum* are being investigated.

TABLE 3. Rare vascular plants of Alleghany County as determined by the North Carolina Natural Heritage Program (Buchanan & Finnegan 2010), including protection status and rarity ranking. **Bold** taxa are unverified sight records not included in the taxonomic summary.

Taxon	State Rank	Global Rank	State Status	Federal Status
Adlumia fungosa	S2	G4	SR-P	
Arethusa bulbosa	**S1**	**G4**	**E**	
Arisaema triphyllum ssp. *stewardsonii*	S2	G5T4	SR-P	
Calamagrostis canadensis var. *canadensis*	S1	G5T5	SR-P	
Caltha palustris	**S1**	**G5**	**SR-P**	
Camassia scilloides	S1	G4G5	T	
Campanula aparinoides	S2	G5	SR-P	
Cardamine rotundifolia	S2	G4	SR-P	
Carex baileyi	S2	G4	SR-P	
Carex buxbaumii	S2	G5	SR-P	
Carex conoidea	S1	G5	T	
Carex sp. 2	S1	G1	SR-T	FSC
Carex oligocarpa	S1	G4	SR-P	
Carex trichocarpa	S1	G4	SR-P	
Carex utriculata	S1	G5	SR-P	
Carex vesicaria	S1	G5	SR-P	
Carex woodii	S3	G4	SR-P	
Caulophyllum giganteum	S1	G4G5Q	SR-P	
Chamerion platyphyllum	S1	G5T5	SR-P	
Chelone cuthbertii	S3?	G3	SR-L	FSC
Chelone obliqua	S2	G4	SR-T	
Chenopodium simplex	S1	G5	SR-P	
Cladium mariscoides	S3	G5	SR-O	
Coptis trifolia var. *groenlandica*	S1	G5T5	SR-P	
Crataegus coccinea	S2?	G5	SR-P	
Crocanthemum propinquum	S1	G4	SR-P	
Cuscuta cephalanthi	S1	G5	SR-T	
Delphinium exaltatum	S2	G3	E-SC	FSC
Dendrolycopodium hickeyi	S2?	G5	SR-P	
Deschampsia cespitosa ssp. *glauca*	S1	G5T5	SR-P	
Dichanthelium annulum	S1	GNR	SR-P	
Dichanthelium boreale	S2	G5	SR-P	
Dichanthelium spretum	**S1S2**	**G5**	**SR-D**	
Echinacea purpurea	S1	G4	SR-P	
Glyceria laxa	S1	G5	SR-P	
Hackelia virginiana	S1S2	G5	SR-P	
Helenium brevifolium	S2	G4	E	
Heuchera hispida	S1	G5T3?	SR-P	
Hexalectris spicata	S2	G5	SR-P	
Hydrastis canadensis	S2	G4	E-SC	
Lilium canadense ssp. *editorum*	S1	G5T4	SR-P	
Lilium grayi	S3	G3	T-SC	FSC
Liparis loeselii	S1	G5	SR-P	
Lonicera canadensis	S2	G5	SR-P	
Meehania cordata	S2	G5	SR-P	
Menyanthes trifoliata	S1	G5	T	
Micranthes caroliniana	S3	G3	SR-T	FSC
Monotropsis odorata	S3	G3	SR-T	FSC
Parnassia grandifolia	S2	G3	T	FSC
Platanthera grandiflora	**S2**	**G5**	**SR-P**	
Prenanthes alba	S2?	G5	SR-P	
Pycnanthemum virginianum	S1?	G5	SR-P	
Quercus ilicifolia	S2	G5	T	
Rhynchospora alba	S2	G5	SR-P	
Robinia hispida var. *fertilis*	S1	G4T1Q	SR-O	
Rubus dalibarda	S2	G5	E	
Sceptridium oneidense	S2	G4Q	SR-P	
Scutellaria saxatilis	S1	G3	SR-T	
Silphium connatum	S2	G3G4Q	SR-T	

TABLE 3. continued.

Taxon	State Rank	Global Rank	State Status	Federal Status
Silphium perfoliatum	S1	G5	SR-P	
Spartina pectinata	S1	G5	SR-P	
Spiraea corymbosa	**S1**	**G5T4?**	**SR-O**	
Spiranthes lucida	S1	G5	SR-O	
Stenanthium gramineum var. *robustum*	S1	G3G5Q	SR-P	
Thalictrum macrostylum	S2	G3G4	SR-L	FSC
Thelypteris simulata	S1	G4G5	T	
Vaccinium macrocarpon	S2	G4	SR-P	
Veronica americana	S2	G5	SR-P	
Woodsia appalachiana	S2	G4	SR-P	
Woodsia ilvensis	S1	G5	SR-P	

S1 (GI) = critically imperiled in state (globally), 1-5 extant populations; S2 (G2) = imperiled in state (globally), 6-20 extant populations; S3 (G3) = rare or uncommon in state (rare throughout range or occurring in a restricted habitat), 21-100 extant populations; G4 = apparently secure globally, 100-1000 extant populations; G5 = demonstrably secure globally, 1000+ extant populations; G_Q = questionable taxonomic assignment; T_ = rank of subspecies or variety

E = Endangered, continued existence in state in jeopardy; T = threatened, likely to become Endangered through all or a portion of range; SR = Significantly Rare, 1-100 populations statewide and reduced by habitat destruction; SR-L = endemic or near-endemic to NC; SR-T = rare throughout global range; SR-D = disjunct to NC from a main range elsewhere; SR-P = occurs at periphery of range; SR-O = range is sporadic or cannot be accommodated under other Significantly Rare categories.

FSC = Federal Species of Concern. (explanation of ranks from Sorrie et al. [2006]).

As with any large scale study, many taxonomic issues were encountered. Some of these, for example, involve:

1. *Acer*—collections referred to as *Acer nigrum* are atypical for this species and may represent additional variation within the *A. saccharum* species complex.
2. *Calystegia*—members of the "*sepium* complex", as well as *C. silvatica* ssp. *fraterniflora*, are highly variable and often difficult to segregate.
3. *Elymus*—some individuals appear intermediate between *E. glabriflorus* and *E. macgregorii*, while *E. virginicus* is presumably absent from the flora.
4. *Eutrochium*—high levels of morphological variation in trichome structure for *E. purpureum* var. *purpureum* are not well addressed in the literature.
5. *Fallopia*—many populations are intermediate between *F. cristata* and *F. scandens* with regard to fruit morphology.
6. *Lycopus*—potential introgression between most *L. uniflorus* and *L. virginicus* (see Henderson 1962) in Alleghany County has produced a swarm of entities attributable to the hybrid *L. ×sherardii*. Gene flow between these two species seems plausible, and few if any populations of either species appear "pure."
7. *Pycnanthemum*—at least two distinctive and consistently separable entities are combined within the concept of *P. muticum*. Likewise, many aberrant forms not assignable to any concept were encountered.
8. *Tilia*—several populations, particularly in mafic sites, have abaxial leaf vestiture approaching var. *americana* and clearly not densely stellate-tomentose as in the frequently encountered var. *heterophylla*; however, these aff. var. *americana* populations do possess sparse stellate trichomes intermixed with acicular hairs suggesting some local introgression between these taxa.
9. *Vitis*—like many other taxa with intergrading varieties (e.g., *Fagus grandifolia*), *V. aestivalis* var. *aestivalis* and var. *bicolor* can only rarely be differentiated.

Species Richness

To date, only three floristic inventories that were explicitly considered comprehensive (i.e., collections made over one or more full growing seasons) for a given county within North Carolina have been conducted (Horton 1957; Britt 1960; Blair 1967). However, other inventories have been published that consist of areas of compa-

rable size to a county, but were not within equally defined political boundaries (e.g., Sorrie et al. 2006; 734.8 km^2 = 1206 taxa). Similarly, some floras have implied that they were county-wide in scope, but have either admitted to the inadequate collection of certain plant groups (e.g., Memminger 1915) or were fractious and ill-defined (Wood & McCarthy 1886; 1202 taxa; Peattie 1928, 1929a, 1929b, 1929c, 1930, 1931, 1937; 1090 taxa). All three of the presumably complete county floras were M.S. theses that were not formally published. These studies include Beaufort County (Blair 1967; 2142.4 km^2, 951 taxa), Robeson County (Britt 1960; 2458.5 km^2, 931 taxa), and Rowan County (Horton 1957; 1324.4 km^2,787 taxa). These floras represent areas within the Tidewater/Coastal Plain, Coastal Plain, and Piedmont regions of North Carolina, respectively. This checklist for Alleghany County constitutes the first full county flora primarily from the Mountain region of the state, as well as the first such flora to be produced in the last 45 years. It also important to note that Memminger's work was within an entirely montane county (Henderson County). On a similar note, Peattie's studies were chiefly within a Piedmont county with some mountains to the far west (Polk County and adjacent South Carolina). Likewise, Alleghany is a far smaller county, but contains more recorded taxa than previous county-wide comprehensive studies.

To assess the comprehensive nature of this study, several species area power models were consulted. Despite considerable variation between models (Table 4), all demonstrated a 40% or greater positive percent deviation from the number of predicted species for this flora, except for the Cumberland Plateau model, which indicated a slight negative deviation from the expected number of species. This divergence from the other models is likely attributed to the source data used to develop this regression curve. No floras in excess of 10,300 ha were utilized by Huskins and Shaw (2010), thus making an area the size of Alleghany County well outside the predictive limitations of the derived model. Based on this analysis, Alleghany County exhibits a species richness far above what would be expected for an area its size (Table 4). For example, when excluding cultivated taxa, the total species predicted for the North Carolina Mainland is 711. The actual number of species is nearly twice this prediction (1360 spp.) or 91.3% above the predicted number.

This high species richness is most likely the consequence of a broad array of community types and habitats (see below), and the county's small but notable ecotone-like transition from the Mountains to the Piedmont (foothills). The geologic, edaphic, hydrologic, and climatic heterogeneity of Alleghany County plays a major role in this pronounced species richness. Likewise, high levels of disturbance have added a prominent exotic component to the flora, which undoubtedly contributes to this higher than predicted richness. Similarly, the general paucity of large-scale (countywide or bigger) studies for model construction may also bias species area predictions. In contrast, some recent data also suggest that newer floras generally exhibit more species than older floras of comparable size areas (Denslow et al. 2010). A few additional variables that are likely responsible for these results include the application of narrower taxonomic concepts, a liberal criterion for alien species inclusion within the flora, time, effort, and prior floristic experience. Lastly, the fact that most models indicate that Alleghany County is far more species rich than expected suggests that this study is comprehensive.

Habitat Affinities

The landscape of this county is a mosaic of habitats, ranging from extremely dry to dry-mesic areas, particularly along the edge of the Blue Ridge Escarpment and adjacent foothills, to mesic coves and inundated bogs and wetlands. National Wetland Indicator Status 1988 list (USDA, NRCS 2012) provides a subjective measure of a plant's environmental preference via its hydrological amplitude. This status, though relative, adds to the ecological attributes of a flora. "Regional Status" for the Southeast (since some plants demonstrate different wetland preference in other geographical regions) was accessed for all taxa, with a separate analysis of taxa from non-cultivated origins (i.e., naturalized + invasive + adventive + native) included in brackets. Of the total flora, only 859 (57.0%) [835 59.3%] had a regional designation. These plants were divided near equally into three groups. The first group was comprised of "upland" and "facultative upland" taxa (287, 33.4%) [279, 33.4%], which are most likely to occur in non-wetlands. A second group consisted of "facultative" taxa (260, 30.3%) [253, 30.3%] that are equally likely to occur in non-wetlands or wetlands. The third group contained "facultative wetland" or "obligate wetland" taxa (312, 36.3%) [303, 36.3%], which were most likely to occur in

TABLE 4. Comparison of various species-area models utilizing the known vascular flora of Alleghany County, North Carolina.

	SPECIES-AREA MODELS				
Origin	NC Mainland	NC Mountains	Continental US	Cumberland Plateau	Mixed and Western Mesophytic Forests
	711 spp.	770 spp.	623 spp.	1462 spp.	945 spp.
Exotic + Native (non-cultivated) 1360 spp.	91.3	76.6	118.3	-7.0	43.9 [0.8]
Exotic + Native (non-cultivated and non-adventive) 1335 spp.	87.8	73.4	114.3	-8.7	41.3 [0.8]
All Species 1457 spp.	**104.9**	**89.2**	**133.9**	**-0.3**	**54.2 [0.8]**

Note: Species-area models compare at the species-level only and values represent percent deviation from the predicted number of species (predicted number listed under each model). A proposed corrected version (Huskins and Shaw 2010) of the Mixed and Western Mesophytic forest regions model (Wade and Thompson 1991) is provided in brackets as a percent deviation from the respective original model.The first two origin categories also exclude persistent species, while the last category is all inclusive and intended for comparison purposes only.

wetlands. These data confirm that Alleghany County has a wide range of habitat heterogeneity and thus help to explain the high level of floristic diversity found here.

Communities

The plant communities of Alleghany County are initially divided into two categories: natural and disturbed. As implied, natural communities are relatively unaltered areas containing native elements indicative of little anthropogenic influence. Natural communities are organized into affiliated groups and modified (including additions) from Padgett (2011), with subtypes and respective current ranks derived from the North Carolina Natural Heritage Program database (NCNHP 2012). Entries for each provisional community include subtypes listed in brackets with corresponding ranks, followed by a brief general description of the major community as it idiosyncratically occurs in Alleghany County. These categories follow the definitions of Schafale and Weakley (1990) and Schafale (2012). Community assessment was coarsely qualitative in nature and consequently, several other communities and/or subtypes are likely present and may be recognized in the future based on the updated and more finely divided classification scheme of Schafale (2012). Lastly, an additional informal community type (Montane River Aquatic) is qualitatively expanded from previous concepts for the purpose of this study. State Ranks (S) and Global Ranks (G) follow each community type in brackets. Exact definitions for these ranks are enumerated by Padgett (2011), but in general, lower ranks indicate greater conservation concern, ranging from 1 (critically imperiled) to 5 (demonstrably secure). Disturbed communities are generically defined.

NATURAL COMMUNITIES

High Mountain Communities

1) *High Elevation Red Oak Forest* [*Heath Subtype* S2S3 G4].—This community type is not very common as it typically occurs at elevations in excess of 1067 m. Forest structure is generally open and composed of a canopy dominated by *Quercus rubra* var. *rubra*, a near absent subcanopy, a patchy to moderate shrub layer, and a predominately thick orchard-like understory that exhibits less diversity than more mesic cove forests. Good examples of this community occur at Bullhead Mountain and nearby along the Blue Ridge Parkway around Mahogany Rock. In addition to *Quercus rubra* var. *rubra*, other rarely intercalated canopy species include *Betula lenta* var. *lenta*, *Carya glabra*, and even more rarely *Fraxinus americana*, *Quercus coccinea* and *Q. montana*. Understory species include *Acer pensylvanicum*, *Amelanchier arborea*, *Cornus florida*, and *Ilex montana*. Characteristic shrubs include *Kalmia latifolia*, *Rhododendron calendulaceum*, *Vaccinium corymbosum*, and *V. pallidum*. *Castanea dentata* sprouts are often present as well within the shrub layer. The rather dense herb layer is often composed of *Ageratina altissima* var. *roanensis*, *Aralia nudicaulis*, *Carex brunnescens var. sphaerostachya*, *C. debilis*, *C. laxiflora*, *C. virescens*, *Danthonia compressa*, *Dennstaedtia punctilobula*, *Eurybia chlorolepis*, *Maianthemum canadense*, *Solidago curtisii*, and *Thelypteris noveboracensis*.

Low Elevation Mesic Forest

2) *Acidic Cove Forest* [*Typic Subtype* S5 G5].—This community is rather common in the mountains of North Carolina. In Alleghany County it often occurs on midslopes at low to mid-elevations in narrow rocky gorges, usually with some substantial rock outcrops. It differs from Rich Cove Forest due to nutrient-poor edaphic conditions. This community regularly transitions into Rich Cove Forest along bottomlands where richer soils accumulate. It often grades into oak-hickory dominated forests upslope, in drier ridge-top areas. The canopy is primarily closed and often dominated by *Acer rubrum* var. *rubrum*, *Liriodendron tulipifera* var. *tulipifera*, *Quercus montana*, *Q. rubra* var. *rubra*, and *Tsuga canadensis*, with infrequent *Acer saccharum*, *Carya cordiformis*, and *Fraxinus americana* present. Subcanopy species are relatively few, with occasional *Cornus florida* and *Fagus grandifolia* var. *caroliniana* present. The shrub layer is dense, primarily comprised of evergreen ericaceous shrubs such as *Kalmia latifolia*, *Rhododendron catawbiense*, and *R. maximum*, with rare occurrences of *Leucothoe fontanesiana* and deciduous species such as *Rhododendron periclymenoides*. The herb layer is relatively thin, with small patches of dense vegetation restricted to canopy gaps. Characteristic species include *Asplenium platyneuron*, *Carex digitalis* var. *digitalis*, *C. nigromarginata*, *Chimaphila maculata*, *Galax urceolata*, *Maianthemum racemosum* ssp. *racemosum*, *Medeola virginiana*, *Polystichum acrostichoides*, *Ranunculus allegheniensis*, *Sanicula canadensis* var. *canadensis*, *Viola hastata*, and *V. hirsutula*.

3) *Rich Cove Forest* [*Montane Intermediate Subtype* S4 G4; *Montane Rich Subtype* S3 G3G4].—Rich Cove Forest is generally common and well distributed throughout the southern Appalachian mountains. It is most frequently associated with sheltered ravines along the Blue Ridge Escarpment, on upper slopes above the New River (and other tributaries), and on north-facing slopes and associated colluvial fans of major peaks within Alleghany County. These areas often include sheltered rock outcrops that are intermittent and too small to be characterized as cliffs. The occurrence of this community type is frequently correlated with geology, with most sites associated with mafic rock (amphibolite). The nutrient-rich conditions that characterize these forest types are also responsible for high levels of species diversity and vigorous vegetation growth. Consequently, the canopy layer of this forest type is generally closed, comprised of dense assortment of trees including, but not limited to *Aesculus flava*, *Betula lenta* var. *lenta*, *Juglans nigra*, *Liriodendron tulipifera* var. *tulipifera*, *Magnolia acuminata*, *M. fraseri*, *Prunus serotina* var. *serotina*, and *Tilia americana* var. *heterophylla*. Subcanopy trees often present are *Cornus alternifolia*, *C. florida*, *Fagus grandifolia* var. *grandifolia*, *Halesia tetraptera*, and *Hamamelis virginiana* var. *virginiana*. The shrub layer is often sparse, comprised of *Corylus americana*, *Hydrangea arborescens* var. *arborescens*, *Lindera benzoin*, and occasional *Pyrularia pubera*. The herb layer within this community type is perhaps the most difficult to characterize. It is usually dense and diverse, with even small rock outcrops dominated by a variety of species (e.g., *Aquilegia canadensis*, *Micranthes virginiensis*). A few of the characteristic taxa include *Adiantum pedatum*, *Allium tricoccum*, *Anemone acutiloba*, *Aruncus dioicus var. dioicus*, *Asarum canadense*, *Athyrium aspleniodes*, *Cardamine concatenata*, *Carex laxiculmis* var. *laxiculmis*, *C. laxiflora*, *C. plantaginea*, *C. woodii*, *Caulophyllum thalictroides*, *Collinsonia canadensis*, *Dicentra cucullaria*, *Diplazium pycnocarpon*, *Dryopteris* spp., *Festuca subverticillata*, *Geranium maculatum*, *Huperzia lucidula*, *Hydrophyllum virginianum* var. *atranthum*, *Luzula acuminata* var. *carolinae*, *Mitella diphylla*, *Osmorhiza claytonii*, *Panax quinquefolius*, *Persicaria virginiana*, *Poa cuspidata*, *Polygonatum biflorum* var. *biflorum*, *Prosartes lanuginosa*, *Sanguinaria canadensis*, *Sanicula trifoliata*, *Scutellaria saxatilis*, *Tiarella cordifolia*, *Uvularia grandiflora*, and *Viola blanda*.

Low Elevation Dry and Dry-Mesic Forests and Woodlands

4) *Carolina Hemlock Forest* [*Typic Subtype* S2 G2].—This community type is defined by the dominance of *Tsuga caroliniana*, forming a closed or intermittently open canopy due to rocky substrate (Schafale & Weakley 1990). This dominant species is a narrow Southern Appalachian endemic, and like its more widespread sister species, *Tsuga canadensis*, populations are in rapid decline due to the herbivorous invasive Hemlock Woolly Adelgid [*Adelges tsugae* (Annand)]. Both taxa are Federal Species of Concern, but the limited geographic range and population size of *Tsuga caroliniana* makes it more susceptible to extinction. Consequently this community is globally rare, found only in southern Virginia south to northern Georgia along the Southern Appalachians over acidic soils, on steep slopes and bluffs. As noted by Padgett (2011), this community may be fire dependent.

Carolina Hemlock Forest is also rare in Alleghany County, and due to their limited sizes, true well-developed examples of this community do not exist. Most occurrences of this relictual community type are located along the New River palisades near the Virginia border, within New River State Park. Other sites, such as the ridge of Fodderstack Mountain (Doughton Park) along the Blue Ridge Parkway, are very small remnants. Additional interspersed and generally rare canopy species include *Betula lenta* var. *lenta*, *Carya* spp., *Liriodendron tulipifera* var. *tulipifera*, and *Quercus* spp. The subcanopy is almost absent, populated primarily by saplings, while the sparse shrub layer contains species such as *Kalmia latifolia* and *Vaccinium pallidum*. The herb layer is scarce, with rare occurrences of species such as *Goodyera pubescens* and *Mitchella repens*.

5) *Chestnut Oak Forest* [*Dry Heath Subtype* S5 G5; *Herb Subtype* S4 G4G5; *Mesic Subtype* S4? G4].—This is a frequently occurring community type that is most common at low to middle elevations, especially along the Blue Ridge Escarpment and drier south and east-facing slopes within the county. The canopy tends to be closed, but is not particularly dense, and gaps usually occur in very rocky areas. The primary canopy trees include *Quercus montana* as the dominant species, fair amounts of *Q. coccinea*, and occasional *Q. alba* and *Q. rubra*. Other intermittent species include *Acer rubrum* var. *rubrum* and *Carya* spp. Subcanopy trees often include *Amelanchier arborea*, *Cornus florida*, *Crataegus* spp., and *Oxydendrum arboreum*. The shrub layer is variable in density and is usually comprised of species such as *Corylus cornuta*, *Eubotrys recurva*, *Gaylussacia baccata*, *Kalmia latifolia*, *Rhododendron calendulaceum*, *R. catawbiense*, *R. maximum*, *Vaccinium* spp., and *Viburnum acerifolium*. The herb layer is characteristically sparse and exhibits little overall diversity. Frequent components include *Carex appalachica*, *C. pensylvanica*, *C. swanii*, *Chimaphila maculata*, *Coreopsis major* var. *rigida*, *Danthonia compressa*, *D. spicata*, *Dennstaedtia punctilobula*, *Epigaea repens*, *Galax urceolata*, *Galium pilosum*, *Gaultheria procumbens*, *Lespedeza violacea*, *Pteridium aquilinum* var. *latiusculum*, and *Solidago curtisii*.

6) *Granitic Dome Basic Woodland* [S2 G2].—The concept for this community includes forests developed in thin soils over granitic substrates and around the periphery of exfoliated rock outcrops. They are limited to the upper Piedmont. In Alleghany County, this community type is confined to areas atop Stone Mountain's larger granitic domes and a few adjacent slopes, at the base of the Blue Ridge Escarpment. By definition, this community contains some oddly base-rich indicator species that would not be expected to occur over an acidic parent material and there is a general lack of montane species. The canopy is closed to somewhat open, dominated by stunted *Quercus montana*, with interspersed *Carya glabra*, *C. tomentosa*, *Nyssa sylvatica*, and rarely a few *Pinus virginiana*. Per Schafale (2012), *Carya* spp. and *Fraxinus americana* are supposed to be abundant, with oaks generally scarce, thus there is some deviation here from the principal community structure. The subcanopy is essentially absent, while the very sparse shrub layer is occupied by scattered *Gaylussacia baccata*, *Kalmia latifolia*, and *Vaccinium pallidum*. One of the characteristic and most prevalent elements of this community type is its herb layer. This portion of the community lacks diversity and at Stone Mountain, it consists of a near monotypic dense stand of the indicator grass species, *Piptochaetium avenaceum*. Other very rare species include *Carex glaucodea*, *Galax urceolata*, *Hexalectris spicata*, and *Tipularia discolor*.

7) *Montane Oak-Hickory Forest* [*Acidic Subtype* S4S5 G4G5; *Basic Subtype* S3 G3].—Montane Oak-Hickory Forest is widespread through Alleghany County and the mountains of North Carolina. Within the study site, it is most often found along middle to upper slopes just off the Blue Ridge Escarpment, and along inner montane north and east-facing slopes. In contrast to Chestnut Oak Forest, this community occurs in more mesic to sub-mesic, protected sites. As pointed out by Padgett (2011), the soils are variable and range from acidic to somewhat basic, particularly in areas with slight mafic geology. The canopy layer is usually closed and dominated by *Carya cordiformis*, *C. glabra*, *C. ovalis*, and infrequent *C. ovata* and *C. tomentosa*. Oaks also contribute a major component to the canopy layer and include *Quercus alba*, *Q. montana*, and *Q. rubra* var. *rubra*. *Fraxinus americana*, *Magnolia acuminata*, and *M. fraseri* are also usually present in limited amounts. The subcanopy is somewhat dense, comprised of species such as *Amelanchier arborea*, *A. laevis*, *Cornus florida*, *Crataegus macrosperma*, *C. iracunda*, *Hamamelis virginiana* var. *virginiana*, *Ilex montana*, *Menziesia pilosa*, *Ostrya virginiana*, and saplings of other typically canopy-sized trees such as *Acer rubrum var. rubrum*, *Nyssa sylvatica*, and *Oxydendrum arboreum*. The shrub layer is highly variable containing taxa such *Castanea dentata* (sprouts), *Kalmia*

latifolia, *Rhododendron* spp., *Vaccinium* spp. and occasional *Viburnum acerifolium* and *V. prunifolium*, with woody vines such as *Vitis* spp. regularly encountered. The usually sparse to moderately dense herb layer can be rather diverse, with some characteristic species including *Agrostis perennans*, *Aplectrum hyemale*, *Asclepias exaltata*, *Aureolaria laevigata*, *Carex aestivalis*, *C. albicans*, *C. digitalis* var. *digitalis*, *C. pensylvanica*, *Danthonia compressa*, *Dendrolycopodium obscurum*, *Dennstaedtia punctilobula*, *Dichanthelium commutatum var. commutatum*, *Dichanthelium latifolium*, *Dryopteris* spp., *Galium circaezans* var. *circaezans*, *Gentiana austromontana*, *Hieracium paniculatum*, *Houstonia purpurea* var. *purpurea*, *Iris cristata*, *Prenanthes* spp., *Scutellaria elliptica* var. *elliptica*, *Veratrum parviflorum*, and *Zizia trifoliata*.

8) *Pine-Oak/Heath* [*High Elevation Subtype* S2 G2; *Typic Subtype* S3 G3].—This community is most prevalent along steep, rocky ridgelines and crests of low to middle elevations, particularly along the edge of the Blue Ridge Escarpment and south-facing portions of adjacent peaks (e.g., Bullhead Mountain, Saddle Mountain). Soils are characteristically dry and very acidic, generally as a consequence of topography, highly exposed habitat, and dominant vegetation. The canopy is quite open and dominated by *Nyssa sylvatica*, *Oxydendrum arboreum*, *Pinus pungens*, *P. rigida*, *P. virginiana*, *Quercus alba*, *Q. coccinea*, and infrequent *Q. velutina*. The subcanopy is essentially absent, but the shrub layer is usually well developed and characterized by species such as *Castanea pumila*, *Comptonia peregrina*, *Eubotrys recurva*, *Gaylussacia baccata*, *Kalmia latifolia*, *Rhododendron* spp., and *Vaccinium pallidum*. The herb layer is sparse, but includes *Aristida dichotoma*, *Epigaea repens*, *Galax urceolata*, *Gaultheria procumbens*, *Melampyrum lineare* var. *americanum*, *Mitchella repens*, *Pteridium aquilinum* var. *latiusculum*, and the woody vines *Smilax glauca* and *S. rotundifolia*.

Rock Outcrop Communities

9) *Low Elevation Granitic Dome* [S2 G2].—This community is defined by large expanses of exfoliating granitic rock with the absence of deep soil pockets and crevices (particularly along steeper sloping portions of the domes) that are usually found on other more fractious rock types. The top of these outcrops are usually flat and conducive to shallow soil accumulation. Where soil is most developed, this community becomes transitional. The largest example of a Low Elevation Granitic Dome in Alleghany County occurs at Stone Mountain State Park, where the presence of several large plutons makes this a site of national significance (Padgett 2011). Other smaller examples are scattered along the Blue Ridge Escarpment. Vegetation occurs in the shallow soil mats of this community type, specifically at the margins of adjacent forested areas and gently sloping pockets. Because of these constraints, no true canopy or subcanopy exists. Rarely shrubs and small trees from neighboring communities (e.g., Granitic Dome Basic Woodland) may become established, yet remain dwarfed and include *Gaylussacia baccata*, *Kalmia latifolia*, *Pinus* spp., *Rhododendron maximum*, and *Vaccinium pallidum*. The primary components of the community occur in the herb layer in thin soils and include species such as *Bulbostylis capillaris, Cyperus retrorsus, Dichanthelium meridionale, Juncus secundus, Linum medium var. texanum, Minuartia glabra, Paronychia fastigiata var. paleacea, Phemeranthus teretifolius, Scleria pauciflora, and Selaginella rupestris*.

10) *Low Elevation Rocky Summit* [*Acidic Subtype* S3 G3?].—This community type occurs in scattered localities throughout Alleghany County at middle to low elevations, generally below 1067 m. It is comprised of exposed ridges of rugged rock outcrops with uneven vertical to sloped faces. This relatively uncommon community type is located along escarpment ridges and along several of the larger mountains within the county such as Bald Knob, Bluff Mountain, Doughton Mountain, and Twin Oaks Mountain, among others. Vegetation in this community is restricted; very little, if any, canopy is present and most plant life is confined to small islands of soil accumulation along the most horizontally oriented surfaces, in crevices of fractured rock, ledges, and near cliff bases. Higher elevation species are generally lacking. This open canopied community may occasionally support, in areas with deeper soils, shrubs and small trees (usually stunted) in areas with deeper soils such as *Chionanthus virginicus*, *Clethra acuminata*, *Eubotrys recurva*, *Pinus pungens*, *Salix humilis*, *Sorbus americana*, *Chionanthus virginicus*, *Vaccinium erythrocarpum*, and *V. stamineum*. The herbaceous layer is localized and often contains species such as *Andropogon virginicus* var. *virginicus*, *Avenella flexuosa*, *Campanula divaricata*, *Capnoides sempervirens*, *Carex rugosperma*, *Coreopsis* spp., *Crocanthemum canadense*, *Danthonia spicata*, *Helianthus divaricatus*, *Heuchera villosa* var. *villosa*, *Hydatica petiolaris*, *Hylotelephium telephiodes*, *Hypericum gentianoides*, *Schizachyrium scoparium* var. *scoparium*, *Selaginella rupestris*, and *Woodsia* spp.

11) *Montane Cliff* [*Acidic Herb Subtype* S3 G3G4].—The community type is defined by steep rock faces and slopes that accumulate soil in small fissures, ledges, and talus. Ultimately, the sheer slope of this community type eliminates the potential for canopy development, and much of the cliff face is barren except for bryophytes and lichens. Most canopy species are found along the periphery of these cliffs, providing some indirect shading. These sites usually occur near the top of dry ridges and peaks and abruptly descend into mesic forests at their bases. They occur throughout Alleghany County, usually as small isolated examples, but are most frequent in watershed areas of the New River and adjacent tributaries, as well as north-facing slopes of some of the higher peaks. Sparse vascular vegetation is limited to an herb layer and often consists of characteristic species such as *Asplenium montanum*, *A. trichomanes* ssp. *trichomanes*, *Heuchera villosa* var. *villosa*, *Micranthes caroliniana*, and *Polypodium appalachianum*.

12) *Low Elevation Acidic Glade* [*Grass Subtype* S1S2 G1G2].—Occurrences in Alleghany of this community type are few, and limited to small patchy areas surrounding and often associated with or transitional to Low Elevation Rocky Summit communities. This community is characterized by gently to moderately sloping rock outcrops with shallow soils and few crevices supporting a predominance of graminoids, scattered low shrubs, and sparse small trees. As implied, the canopy is open, allowing for high light exposure. Some of the rarely occurring small or stunted trees and shrubs in this community type include species such as *Crataegus macrosperma*, *Diospyros virginiana*, *Quercus montana*, and *Vaccinium* spp. Vegetation mats are often accompanied by lichens (*Cladonia* spp.) and consist of species such as *Andropogon virginicus* var. *virginicus*, *Carex tonsa*, *C. umbellata*, *Cyperus lupulinus* var. *lupulinus*, *Danthonia compressa*, *D. spicata*, *Festuca rubra* var. *rubra*, *F. trachyphylla*, *Schizachyrium scoparium* var. *scoparium*, and *Selaginella rupestris*. Though dominated by graminoids, this community type also harbors the rare occurrence of sexual diploids of *Erigeron strigosus* and the only known locality for *Polygonum tenue* in the county. One of the best examples of this community type occurs at Bluff Mountain, while additional smaller sites are scattered.

Rivers and Floodplains

13) *Montane River Aquatic* [N/A].—This community is described here to accommodate for fully aquatic vegetation within montane river systems. It is perhaps best treated in or at least affiliated with the Rocky Bar and Shore community complex, as it shares affinities with the Rocky Bar and Shore (Riverweed Subtype). As stated by Schafale (2012), the Riverweed Subtype "covers largely-submerged riffles where *Podostemum ceratophyllum* dominates, generally in nearly monospecific stands" and "this community is more aquatic than the other subtypes, and may warrant a separate community type." This community subtype currently lacks a state rank, but is considered G3G5 globally. I concur that it seems distinctive, and here modify and expand the concept to include the presence of other aquatic vegetation in addition to Riverweed. As defined here, this community contains plants rooted in alluvial soils or attached to rocky substrates within larger rivers, often away from neighboring riparian zones. Plants are primarily submerged or rooted-floating herbaceous species in moderately to swiftly-flowing waters, with a general lack of any emergent taxa. This community type notably occurs within the Little River, South Fork of the New River, and the New River itself. Characteristic aquatic species include: *Elodea canadensis*, *Podostemum ceratophyllum*, *Potamogeton epihydrus*, and *Vallisneria americana*.

14) *Rocky Bar and Shore* [*Alder-Yellowroot Subtype* S3 G3G4].—This community is primarily found along the South Fork of the New River and the New River proper, in the vicinity of river banks, but also as exposed river islands. The best examples of this community type include areas that have either gravel or bolder deposits, or soil accumulations in rock outcrops. These riparian zones also include eroded cuts or channeling, but characteristically include gravel and scour bars that are too regularly disturbed via periodic flooding to support a canopy or understory layer, but often leave demonstrable alluvial deposits. Trees are absent to rare and include, *Platanus occidentalis* and *Salix nigra*. Shrubs and small trees characteristic of these areas include *Alnus serrulata*, *Cornus amomum*, *Physocarpus opulifolius* var. *opulifolius*, *Salix sericea*, *Xanthorhiza simplicissima*, and woody vines such as *Vitis labrusca* and *V. vulpina*. Herb layer vegetation is highly variable and fleeting in this community type, but often includes *Boykinia aconitifolia*, *Carex* spp., *Cyperus flavescens*, *Eleocharis* spp., *Equisetum arvense*, *Glyceria striata* var. *striata*, *Hypericum mutilum* var. *mutilum*, *Impatiens capensis*, *I. pallida*, *Juncus*

spp., *Lobelia cardinalis*, *Ludwigia palustris*, *Myosotis scorpiodes*, *Persicaria pensylvanica*, *P. puncata*, and *Scutellaria lateriflora*, among others. Some invasive exotics (e.g., *Arthraxon hispidus* var. *hispidus* and *Microstegium vimineum*) can be found in this community type, presumably due to regular disturbance via river scouring. A few small areas along the Little River and Prathers Creek approach the Twisted Sedge Subtype, however *Carex torta* is not notably dominant at these sites.

15) *Montane Alluvial Forest* [*Small River Subtype* S1 G3].—This community is found in floodplains and slopes along major tributaries within the county. Although it contains an amalgamation of cove and floodplain species, it is the presence of this latter group of indicator taxa, coupled with a regular flooding regime that distinguishes this community from Rich Cove Forests and Acidic Cove Forests. The best current examples occur in areas adjacent to rivers that have steep slopes, below rocky cliffs that are for the most part agriculturally inaccessible. It was formerly much more common, but the rich alluvium in riparian areas is prized by farming, while the remainder of riverside landscape has fallen to other industries including construction and timber production. Important mesophytic canopy species that contribute a relatively dense cover include *Acer rubrum* var. *trilobum*, *Aesculus flava*, *Betula alleghaniensis*, *Liriodendron tulipifera* var. *tulipifera*, *Platanus occidentalis*, *Populus ×jackii*, and *Tsuga canadensis*. Characteristic subcanopy and shrub layer taxa are *Acer negundo* var. *negundo*, *Carpinus caroliniana* var. *virginiana*, *Prunus americana*, *Ptelea trifoliata* var. *trifoliata*, *Rhododendron arborescens*, *R. maximum*, *Sambucus canadensis*, *Tilia americana* var. *heterophylla*, *Viburnum prunifolium*, and *Xanthorhiza simplicissima*. The herb layer is generally dense and comprised of many cove species, as well as other taxa including *Boehmeria cylindrica*, *Dichanthelium* spp., *Glyceria* spp., *Heracleum maximum*, *Impatiens* spp., *Leersia* spp., *Packera aurea*, and *Viola* spp.

Nonalluvial Wetlands

One of the most important natural aspects of Alleghany County is its possession of numerous nonalluvial wetlands. As stated by Padgett (2011), this small county contains "some of the best examples of Southern Appalachian Bog and Swamp Forest-Bog Complex natural communities in the state and the nation." He continues by enumerating a few exemplars including Brush Creek Bog, Laurel Branch Bog, Skunk Cabbage Bog, and Sparta Bog. These wetlands are inherently fed by small spring seeps that are themselves uncommon and rather unique communities. This hydrological and ecological community interdependence is a frail example of the synergistic nature of our natural heritage. Consequently, the following communities are some of the most imperiled in North Carolina, largely due to agriculture and residential development.

16) *Low Elevation Seep* [*Montane Subtype* S2S3 G2G3].—Seeps are frequent scattered elements of the county, often originating on mountain or hillsides and draining into low lying wetlands or other tributaries. Many of the larger examples include very small woodland streams that spread out in lowlands creating seepage bogs. This community type is transitional to a Rich Montane Seep, but generally lacks rich higher elevation indicator species found in this community. Species composition is otherwise quite variable. Soils are often a mixture of rocky intermittent stretches and mucky saturated areas. The canopies of Low Elevation Seep communities are usually closed, with only the most inundated areas with gaps. Common mesic trees include *Acer rubrum* var. *rubrum*, *Aesculus flava*, *Betula lenta* var. *lenta*, *Liriodendron tulipifera* var. *tulipifera*, *Magnolia acuminata* var. *acuminata*, *Quercus rubra* var. *rubra*, and *Tilia americana* var. *heterophylla*. Subcanopy and shrub layer species include sparse *Clethra acuminata*, *Ilex montana*, *Kalmia latifolia*, *Oxydendrum arboreum*, *Rhododendron* spp., and *Vaccinium* spp. Herbaceous vegetation is distinctive, occurring on mounds, in rock crevices, and in muddy margins of the seep composed of species such as *Cardamine bulbosa*, *C. flagellifera* var. *flagellifera*, *C. pensylvanica*, *C. rotundifolia*, *Carex bromoides* ssp. *montana*, *C. prasina*, *C. scabrata*, *C. stipata* var. *stipata*, *Chelone glabra*, *Deparia acrostichoides*, *Glyceria melicaria*, *Hydrocotyle americana*, *Juncus* spp. (one site with *J. gymnocarpus*), *Micranthes micranthidifolia*, *Thalictrum clavatum*, *Trautvetteria caroliniensis* var. *caroliniensis*, *Trillium sulcatum*, *Veratrum viride*, rarely *Veronica americana*, common *Viola cucullata*, and *V. macloskeyi* ssp. *pallens*.

17) *Southern Appalachian Bog* [*Low Elevation Subtype* S1S2 G1G2; *Skunk Cabbage Subtype* S1 G1; *Typic Subtype* S1S2 G1G2].—According to Padgett (2011) this general community type is restricted to the mountains of North Carolina, Tennessee, and Virginia. These communities occur throughout the county, particularly

along the Blue Ridge Parkway, NC 18 and US 21. Vegetation within these sites is very zonal with an absence of canopy species, encroaching shrubs that are also interspersed throughout in lesser amounts, and distinctive tussocks of graminoids and herbs that form an open inundated meadow. These communities serve as refugia for many northern and coastal disjunct species, further adding to their uniqueness and varying in quality, with the most altered examples containing few if any rare species and simply transitional to a degraded wet-meadow. Substrate is variable, with many of Alleghany County's bogs occurring over mafic rock, or in the case of Savannah Church Bog, over ultramafic rock that imparts some fen-like qualities to the vegetation. Commonly encountered shrubs and trailing woody species include *Alnus serrulata*, *Aronia* spp., *Hypericum densiflorum*, *H. prolificum*, *Kalmia carolina*, *Lindera benzoin*, *Lyonia ligustrina*, *Rhododendron viscosum*, *Rosa palustris*, *Salix sericea*, *Spiraea alba*, *S. latifolia*, *Vaccinium fuscatum*, *V. macrocarpon*, and *Viburnum cassinoides*. Herbs and graminoids are especially diverse, with some consisting of *Andropogon glomeratus var. glomeratus*, *Apios americana*, *Bartonia virginica*, *Calamagrostis canadensis var. canadensis*, *C. coarctata*, *Calopogon tuberosus* var. *tuberosus*, *Carex atlantica*, *C. buxbaumii*, *C. echinata* ssp. *echinata*, *C. stricta*, *C. styloflexa*, *Chelone cuthbertii*, *Cicuta maculata* var. *maculata*, *Dichanthelium lucidum*, *Drosera rotundifolia* var. *rotundifolia*, *Eleocharis* spp., *Epilobium leptophyllum*, *Eriocaulon decangulare* var. *decangulare*, *Eriophorum virginicum*, *Galium asprellum*, *Gentiana saponaria*, *Glyceria laxa*, *Juncus brevicaudatus*, *J. longii*, *J. subcaudatus*, *Linum striatum*, *Lysimachia terrestris*, *Osmunda* spp., *Osmundastrum cinnamomeum*, *Oxypolis rigidior*, *Panicum virgatum* var. *virgatum*, *Parnassia* spp., *Platanthera* spp., *Polygala cruciata* var. *aquilonia*, *Pycnanthemum* spp., *Rhynchospora* spp., *Sanguisorba canadensis*, *Scleria* spp., *Selaginella apoda*, *Stenanthium gramineum* var. *robustum*, *Thalictrum macrostylum*, *Thelypteris palustris* var. *pubescens*, and *Xyris torta*.

18) *Swamp Forest-Bog Complex* [*Typic Subtype* S2 G2].—This community type shares many affinities with Southern Appalachian Bogs. The primary difference is in the physiognomy of these areas, which exhibits a complex matrix of dense wooded thickets with intermittent small openings that correspondingly vary from shade tolerant to shade intolerant species. As with bogs, they are mostly restricted to bottomlands. These communities are considered to be drier than bogs, yet this varies considerably. The most common occurrences of Swamp Forest-Bog Complex can be found along the Blue Ridge Parkway neighboring some of the streams (e.g., Brush Creek, Big Pine Creek) that parallel this road. Canopies often contain species such as *Acer rubrum var. rubrum*, *Pinus rigida*, *P. strobus*, and *Tsuga canadensis*, with rare occurrences of *Magnolia tripetala*. The subcanopy and shrub layers intergrade and include species such as *Alnus serrulata*, *Hypericum densiflorum*, *Ilex verticillata*, *Kalmia carolina*, *K. latifolia*, *Rhododendron maximum*, *Sambucus canadensis*, *Toxicodendron vernix*, and *Viburnum nudum*. Species often encountered within the herb layer are *Arisaema triphyllum* ssp. *stewardsonii*, *Carex bullata*, *C. folliculata*, *C. gynandra*, *C. intumescens* var. *intumescens*, *C. laevivaginata*, *C. longii*, *Cinna arundinacea*, *Dryopteris cristata*, *Festuca subverticillata*, *Houstonia serpyllifolia*, *Osmunda claytoniana*, *Osmundastrum cinnamomeum*, *Onoclea sensibilis* var. *sensibilis*, *Rubus dalibarda*, *R. hispidus*, and *Symplocarpus foetidus*.

DISTURBED COMMUNITIES

Culturally disturbed and ruderal communities are prevalent within the county. These areas are exemplified by urbanization, roadsides and ecotones, residential lawns, annual crop lands, Christmas tree plantations, and any other areas maintained by regular human activity. Due to the complex nature of these communities, larger associations are not given.

19) *Plantations*.—This community category refers to areas of woody plant cultivation for agroeconomical purposes. More specifically, these farms include regularly spaced plantings of *Abies concolor*, *A. fraseri*, *Buxus sempervirens*, *Pinus strobus*, and other species that are harvested after several years of growth and maintenance. Intermittent vegetation is usually comprised of exotic annual and perennial grasses such as *Digitaria sanguinalis* and *Schedonorus arundinaceus*, as well as an assortment of exotic herbs such as *Arctium minus*, *Cerastium* spp. and *Stellaria media*, and native weedy species such as *Ambrosia artemisiifolia* and *Chenopodium album*.

20) *Agricultural Fields and Farms*.—In contrast to a plantation, this community category accommodates both agricultural fields that experience an annual harvest of crops and regular tillage practices and less regularly tilled fallow fields. In addition, this community refers to farm areas that harbor livestock (e.g., cattle and

hogs) in a localized and heavily disturbed environment. Many of the species encountered in this community are exotic adventives that are introduced from the previous year's crop rotation (e.g., *Zea mays* ssp. *mays*), are weedy naturalized species that reseed themselves (e.g., *Amaranthus* spp.) or reemerge from perennial rootstock (e.g., *Convolvulus arvensis*). Likewise, weedy species are often inadvertently introduced as feed contaminants for livestock (e.g., *Marrubium vulgare*) or seed and have ultimately become established elsewhere in the county (e.g., *Silene flos-cuculi* ssp. *flos-cuculi*).

21) *Meadows, Pastures, and Ecotones.*—Sites conforming to this designation refer to any area that exhibits a predominance of graminoids (Cyperaceae, Juncaceae, and Poaceae) and composites (Asteraceae) that are either maintained irregularly, with some succession allowed to occur (meadows), or are utilized for grazing cattle and mowed one to several times annually for hay feed (pastures). In contrast to an agricultural field, soils remain less disturbed. Reminiscent of plantations, they usually contain a predominance of annual and exotic perennial grasses, but often also have native graminoids regularly interspersed within the site. In Alleghany, pastures and meadows often abut tributaries and comprise the floodplains of these waterways. Such areas are frequently wet, with partially inundated mid-field depressions. Sites like this are most common along the New River and Little River and their associated tributaries. These wet meadows are sometimes transitional to Southern Appalachian Bogs, and in addition to exotics, they often contain native species such as *Carex frankii*, *C. styloflexa*, *Leersia oryzoides*, *Lilium grayii*, *Mimulus ringens* var. *ringens*, *Scirpus cyperinus*, *S. expansus*, *S. polyphyllus*, and *Spartina pectinata*. In other areas, pastures are commonly surrounded by woodlands and are ecotonal around their perimeters. Upland taxa, particularly small native trees such as *Crataegus* spp. and *Malus coronaria* notoriously occur in these habitats.

22) *Roadsides, Power Line Corridors, and Ecotones.*—These areas are highly generalized and account for a wide array of vegetation patterns. As with pastures bordering tributaries, roadsides are quite often periodically flooded and wetland-like. Included within this community type are flat gravelly roadside shoulders, drainage ditches, and woodland ecotones. As a consequence of this tremendous variability, these sites often contain both exotic and native taxa, the latter of which are introduced from bordering natural communities. Drainage ditches are particularly important as they can harbor hydrophilic native taxa such as *Carex lurida*, *Persicaria hydropiper*, *Schoenoplectus tabernaemontani*, and *Scirpus hattorianus*. In contrast, the physical instability of this community type exposes it to the introduction (perhaps vehicular in some cases) of adventives (e.g., *Sorghum bicolor* var. *bicolor* and *Tagetes* spp.) and other naturalized exotics. Woodland borders and embankments are especially important as they provide open habitat for native taxa such as *Desmodium* spp., *Helianthus atrorubens*, *Lespedeza* spp., *Phlox* spp., *Physostegia virginiana* ssp. *praemorsa*, *Spiranthes cernua*, and *Veronicastrum virginicum*. Power line corridors are often similar to meadows, yet contain considerable small shrubs and stump sprouts from periodic clearing procedures. Most taxa within these sites are native successional species.

23) *Old Homesteads.*—Like any area that has been inhabited for long periods of time, Alleghany County contains several homesites and lots that have been abandoned and allowed to dilapidate. In many cases, the former foundation and/or chimney of a house may be visible. In other situations, only the level area and surrounding vegetation provide evidence of a possible human-derived structure. In any case, these sites often contain cultivated species that have either remained persistent (e.g., *Chaenomeles speciosa*, *Cunninghamia lanceolata*, *Thuja occidentalis*, and *Viburnum opulus* var. *opulus*) or appear to have spread, mostly vegetatively, to surrounding areas (e.g., *Aster tataricus* and *Lycium chinense*). One aspect of this community category that is particularly interesting is that it provides some insight into the historical preference of cultivated species in the county.

24) *Residential and Urban Areas*– This community differs from well maintained pastures and old homesteads in regard to the close anthropogenic activity associated with it. In essence, residential areas are comprised of lawns, urban areas, and disturbed areas around gardens that provide habitat for the infiltration of exotics, particularly those cultivated for aesthetic and/or consumption purposes. These introduced taxa may readily, but sparingly become naturalized in small exposed areas adjacent to their point of origin. In some cases, homes and yards are developed around streams, often allowing for the establishment of exotic wetland

species (e.g., *Glyceria declinata*, *Nasturtium officinale*). Examples of weakly escaping or naturalized species include herbaceous exotic taxa like *Aegopodium podagraria*, *Antirrhinum majus*, *Chionodoxa luciliae*, and even woody species like the native tree *Crataegus phaenopyrum* or exotic shrub *Prunus tomentosa*. Similarly, many rural residences have vegetable gardens and waste heaps that occasionally provide a source of inoculation for species such as *Solanum lycopersicum* and *S. tuberosum*. Mulch beds also occasionally harbor adventives introduced from intercalated seeds that sporadically germinate.

25) *Ponds and Reservoirs*.—This community includes all manmade bodies of water within the county, and is treated here mainly because of their anthropogenic origin. These areas include small ponds and larger lakes of various sizes. Lake Louise, located at Roaring Gap Club, is the largest reservoir in the county (Figs. 1 & 3). It was constructed in 1927, and other than general maintenance and recreational use, it has received little alteration. It was built in close proximity to several known bogs and harbors many taxa around its margins with bog-like affinities. Consequently, this lake and the vegetation that surrounds it are likely relicts of a once natural community. Little Glade Mill Pond and Hare Mill Pond along the Blue Ridge Parkway are other examples of such communities. The semi-natural aspect of these sites is problematic for classification purposes, and they appear to be closely associated with Piedmont/Mountain Semipermanent Impoundment communities (Schafale & Weakley 1990; Schafale 2012). Though many taxa found in these areas are exotics that are capitalizing on the open environment, most are native. Serial wetland strata in this community include open water, free-floating herbaceous species such as *Lemna minor*, rooted floating herb species exemplified by *Callitriche heterophylla* var. *heterophylla* and *Potamogeton diversifolius*, and submerged to emergent taxa such as *Isoetes valida* and *Schoenoplectus purshianus*. Margins of these water bodies transition to wet, sedge meadows dominated by species such as *Carex atlantica*, *C. leptalea* var. *leptalea*, *Cyperus bipartitus*, *Juncus acuminatus*, and *Scirpus* spp. These portions are the most bog-like and often contain many infrequent to rare taxa such as *Carex canescens* var. *canescens*, *Eleocharis palustris*, and *Juncus brevicaudatus*. Other notable non-graminoid herbs include *Liparis loeselii*, *Lysimachia terrestris*, *Triadenum virginicum*, and *Spiranthes lucida*. Woody species are less common, but usually include *Alnus serrulata*, *Hypericum densiflorum*, and *Spiraea tomentosa*.

Disturbance

As noted by Padgett (2011), Alleghany County contains a large number of Significant Natural Heritage Area (SNHA) tracts for such a small county. Forty-eight SNHAs have been identified, four of which are Nationally Significant, 21 that are State Significant, 15 of Regional Significance, and seven that are ranked as County Significant. This high number of SNHAs stands in stark contrast to the larger picture of overall heavy land use in the county, which would suggest that this area would have far fewer areas of significance than it currently possesses.

Though this area is not dominated by urbanization, the demands of agriculture have ultimately contributed to a greatly disturbed landscape, as further evidenced by the large number of exotic species found here, as well as propensity for some of these to be highly invasive. Moreover, the most distressing aspect of anthropogenic activity in Alleghany County is perhaps the obvious reduction in local montane wetlands. This is particularly evident in the numerous bog-like remnants that have been converted to farmland through ditching/draining practices throughout the area. To further complicate matters, the dynamic nature and complex vegetation of these natural communities is not well resolved (Wichmann 2009) in the midst of severe decline.

According to Murdock (1994), wetlands harbor at least one-third of the threatened and endangered species in the United States, and the non-alluvial wetlands of the mountains are quite small on average (usually under 4.05 ha). Southern Appalachian Bogs and Swamp Forest-Bog Complexes are particularly important due to their rarity and the fact that these rather disparately located communities harbor many plants that are not only uncommon in general, but are often found in no other community type. The destruction of these fragile habitats has reduced the natural area quality in Alleghany County. Weakley and Schafale (1994) estimated that only 23% of the Southern Appalachian Bogs in North Carolina still contain their natural vegetation, while only 10% of the natural vegetation remains in Swamp Forest-Bog Complexes (Typic Subtype). The once prolific natural wetlands of Alleghany County have been reduced to a few small sites (e.g., Sparta Bog, Brush Creek

TABLE 5. Auxiliary list of taxa recognized in the Alleghany County flora that deviate from the primary source of taxonomic concepts (Weakley 2011). See text and Table 6 for definitions of origin symbols.

Family	Origin	Taxon	Concept Source	Difference from Weakley (2011)
Pinaceae	†	Abies concolor	FNA (1993+)	Not included
Cupressaceae	†	Callitropsis ×leylandii	USDA, NRCS (2012)	Not included
Campanulaceae	‡	Campanula punctata	Bailey (1924)	Not included
Cyperaceae	Native	Carex gracillima × C. virescens	R.F. C. Naczi (pers. comm.)	Tentative hybrid not treated
Cupressaceae	†	Chamaecyparis lawsoniana	FNA (1993+)	Not included
Cupressaceae	†	Chamaecyparis pisifera	Rehder (1937)	Not included
Asteraceae	‡	Coreopsis lanceolata aff. var. villosa	FNA (1993+)	Vars. not treated
Rosaceae	†	Cotoneaster aff. horizontalis	Rehder (1937)	Not included
Rosaceae	Native	Crataegus chrysocarpa var. dodgei	Poindexter & Lance (2011)	Included, but infraspecific treatment necessary
Plantaginaceae	†	Digitalis purpurea L. cv. 'Campanulata'	Bailey & Bailey (1976)	Cultivars not recognized
Poaceae	‡	Eragrostis tef	FNA 1993+	Included but not yet keyed
Asteraceae	Native	Erigeron strigosus var. nov.?	R. D. Noyes (pers. comm.)	Morphologically distinctive sexual diploid potentially deserving infraspecific rank
Euphorbiaceae	∞	Euphorbia dulcis cv. 'Chameleon'	Stace (2010)	Species not included; cultivar deduced from popular horticultural websites
Geraniaceae	Native	Geranium carolinianum	Weakley (2011)	Not treated here at the infraspecific level due to difficulty applying concepts
Malvaceae	†	Hibiscus moscheutos L. cv. 'Disco Belle'	Various popular horticultural websites	Cultivars not recognized
Hyacinthaceae	∞	Hyacinthoides ×massartiana	Stace (2010)	Not included
Hydrangeaceae	†	Hydrangea arborescens var. grandiflora	Bailey (1924)	Vars. not treated
Brassicaceae	†	Iberis sempervirens	FNA (1993+)	Included, but not yet keyed
Cupressaceae	†	Juniperus horizontalis	FNA (1993+)	Not included
Xanthorrhoeaceae	†	Kniphofia uvaria	Bailey (1924)	Not included
Orchidaceae	Native	Liparis ×jonesii	Bentley (2000)	Hybrids not recognized
Lamiaceae	Native	Lycopus ×sherardii	Henderson (1962)	Hybrids not recognized
Magnoliaceae	†	Magnolia ×soulangiana	Bailey (1924)	Hybrids not recognized
Rosaceae	†	Malus cf. sieboldii	Rehder (1937)	Not included
Nyctaginaceae	∞	Mirabilis jalapa cv. 'Broken Colors'	Various popular horticultural websites	Cultivars not recognized
Poaceae	**	Miscanthus sinensis var. variegatus	Bailey & Bailey (1976)	Vars. not treated, briefly alluded to
Poaceae	Native	Muhlenbergia schreberi var. palustris	Hitchcock & Chase (1950)	Vars. not treated, but this entity appears distinctive
Vitaceae	Native	Muscadinia rotundifolia var. rotundifolia	Weakley et al. (2011)	Nomenclatural/taxonomic change
Poaceae	Native	Paspalum floridanum ×P. leave	R.J. Leblond (pers. comm.)	Tentative hybrid not treated
Santalaceae	Native	Phoradendron leucarpum ssp. leucarpum	Abbott & Thompson (2011)	This name has priority and proper combination
Pinaceae	†	Picea pungens	FNA (1993+)	Not included
Salicaceae	†	Populus maximowiczii	Bailey & Bailey (1976)	Not included

TABLE 5. continued.

Family	Origin	Taxon	Concept Source	Difference from Weakley (2011)
Lamiaceae	Native	*Pycnanthemum arkansanum*	Grant & Epling (1943)	Cursory examination of type images suggest that this taxon is valid
Rosaceae	†	*Rosa* sp.	—	Unresolved taxon of uncertain origin
Asteraceae	‡	*Rudbeckia hirta* cv. 'Gloriosa Daisy'	Bailey & Bailey (1976)	Cultivars not recognized
Caryophyllaceae	∞	*Saponaria ocymoides*	FNA (1993+)	Not included
Lamiaceae	Native	*Stachys appalachiana*	Poindexter & Nelson (2011)	Included as *Stachys* sp. 3, but name not formally published
Asteraceae	Native	*Symphyotrichum* aff. *novi-belgii*	J.C. Semple (pers. comm.)	Potentially new and aligned with this species
Asteraceae	Native	*Symphyotrichum* aff. *undulatum*	J.C. Semple (pers. comm.)	Potentially new species or variety
Asteraceae	Native	*Symphyotrichum* sp. (subsect. *Dumosi*)	J.C. Semple (pers. comm.)	Unresolved identity, but a unique taxon to the flora
Trilliaceae	Native	*Trillium sulcatum* fo. *albolutescens*	Patrick (1984)	Forms not recognized
Ericaceae	Native	*Vaccinium stamineum*	Weakley (2011)	Not treated here at the infraspecific level due to difficulty applying concepts

Bog, and Skunk Cabbage Bog) while remnants of natural wetlands are apparent by numerous disturbed meadow bog communities. Although these disturbed areas still harbor a few rare plants (as noted by Weakley and Schafale 1994), they are a bleak reminder of the enormous human impact on the natural heritage of this county.

ANNOTATED CHECKLIST

Nomenclature and plant origin (exotic vs. native) follow Weakley (2011) except where taxa were recently described, have new nomenclatural combinations, follow a different taxonomic concept, or are not currently recognized as occurring in the southeast or mid-Atlantic states (see Table 5). Plants of questionable nativity in Weakley (2011) are assigned status based on the PLANTS Database (USDA NRCS 2012). Along with traditional infraspecific ranks of variety and subspecies, three forms, five cultivars, and four potentially novel taxa are recognized in the flora to either aid in the identification of these plants or because they also demonstrate some geographic affinities that imply need for further study. Taxa are arranged alphabetically within each major clade by family, genus, and species. Authorities are abbreviated according to the Brummitt and Powell (1992) scheme, which is continuously updated and available online (Harvard University Herbaria 2012). Major clade organization follows the PhyloCode as derived from Cantino et al. (2007) rather than a linear system (e.g., Reveal 2012) to better reflect phylogenetic relationships and includes four primary groups: LYCOPODIOPHYTA, MONILOPHYTA, ACROGYMNOSPERMAE, and ANGIOSPERMAE (here consisting of the Monocotyledoneae, Nymphaeales, Magnoliidae, and Eudicotyledoneae).

The scientific name of each taxon is preceded by a symbol denoting origin and invasive status as: naturalized exotic (*), invasive exotic (**), adventive exotic (‡), exotic persistent from cultivation (†), native persistent from cultivation (Δ), taxa that appear to have escaped or are weakly spreading from cultivation (∞ = exotic, □ = invasive, ^ = native), or a lack of notation for naturally occurring native taxa. The scientific name is then followed by putative record status including: previously published state record (+), new state record (++), and county record (○), where applicable. "Significantly Rare" taxa (see Table 2) are in **bold type,** and "Watch List" taxa are underlined. A primary community of occurrence, a relative abundance value, representative voucher specimen number(s), and respective repository conclude each taxon entry. An italicized voucher specimen(s) number by the author is in a *year-number* (e.g., *08-274*) format and corresponds to the primary collection

TABLE 6. Symbology and abbreviations used in the checklist of vascular plants known from Alleghany County, North Carolina.

Symbols

Origin Status
* = Naturalized Exotic
** = Invasive Exotic
‡ = Adventive Exotic
† = Exotic Persistent From Cultivation
∞ =Exotic Escaped From Cultivation
□ =Invasive Escaped From Cultivation
Δ = Native Persistent From Cultivation
^ ^ = Native Escaped From Cultivation

Record and Rarity Status
+ = Previously Published State Record
++ = New State Record
○ = County Record
bold = "Significantly Rare"
underlined = "Watch List"

Relative Abundance

V = Very Rare
R = Rare
S = Scarce
I = Infrequent
O = Occasional
F = Frequent
A = Abundant
X = Presumably Extirpated
U = Unknown

Plant Communities

High Mountain Communities
1 = High Elevation Red Oak Forest

Low Elevation Mesic Forest
2 = Acidic Cove Forest
3 = Rich Cove Forest

Low Elevation Dry and Dry-Mesic Forests and Woodlands
4 = Carolina Hemlock Forest
5 = Chestnut Oak Forest
6 = Granitic Dome Basic Woodland
7 = Montane Oak-Hickory Forest
8 = Pine-Oak/Heath

Rock Outcrop Communities
9 = Low Elevation Granitic Dome
10 = Low Elevation Rocky Summit
11 = Montane Cliff
12 = Low Elevation Acidic Glade

Rivers and Floodplains
13 = Montane River Aquatic*
14 = Rocky Bar and Shore
15 = Montane Alluvial Forest

Nonalluvial Wetlands
16 = Low Elevation Seep
17 = Southern Appalachian Bog
18 = Swamp Forest-Bog Complex

*Disturbed Communities**
19 = Plantations
20 =Agricultural Fields and Farms
21 = Meadows, Pastures, and Ecotones
22 = Roadsides, Power Line Corridors, and Ecotones
23 = Old Homesteads
24 = Residential Areas
25 = Ponds and Reservoirs

Note: Communities are general and follow Schafale and Weakley (1990) and Schafale (2012). (*) = informally recognized community types. Table format is adapted from Estes (2005).

housed at the Appalachian State University Herbarium (BOON). Taxa represented by collections from other individuals are identified by the collector's name and number, along with respective repository and date of collection in brackets (e.g., *J.L. Michael 792* [NCU, 25 June 1968]). Herbarium acronyms follow Index Herbariorum (Thiers, continuously updated).

Unvouchered records derived solely from the Flora of the Southeast Atlas (2012) are indicated with a source reference: 1) "*FSE-CVS*" = Carolina Vegetation Survey data, and 2) "*FSE-RAB*" = Radford et al. (1968). Similar records from the North Carolina Natural Heritage Program, though also partially integrated into the Flora of the Southeast Atlas (2012) database, are represented separately as "*NCNHP*" due to rarity status. These collective literature and sight reports are unverified and should be acknowledged with caution. Taxa that are derived from these three sources are not included in the taxonomic summary.

Relative abundance is assigned here as inclusive for the entire study site and is adapted from Murrell and Wofford (1987) and Estes (2005): Very Rare (V) = found in a single locale, usually in a small population; Rare (R) = known from one to two localities, in small to moderate populations; Scarce (S) = several small or one to two moderate to large populations; Infrequent (I) = scattered throughout in many small populations, or several

moderate to large populations; Occasional (O) = well distributed in many small to moderate populations or in few localized very large populations; Frequent (F) = generally encountered throughout with regularity in populations of various sizes; Abundant (A) = characteristic and dominant in many sites; Extirpated (X) = taxon presumed to be no longer extant; and Unknown (U) = status of taxon is unverified. A guide to the abbreviations and symbology used in the list is presented in Table 6.

LYCOPODIOPHYTA

Isoetaceae

Isoetes valida (Engelm.) Clute – 25; S; 10-186

Lycopodiaceae

Dendrolycopodium hickeyi (W.H. Wagner, Beitel, & R.C. Moran) A. Haines – 18; R; 09-603

Dendrolycopodium obscurum (L.) A. Haines – 7; F; 08-919

Diphasiastrum digitatum (Dill. ex A. Braun) Holub – 7; A; 10-14

Diphasiastrum tristachyum (Pursh) Holub ○ – 12; R; 09-895

Huperzia lucidula (Michx.) Trevis. – 3; F; 08-763

Lycopodium clavatum L. ○ – 8; V; 08-1239

Selaginellaceae

Selaginella apoda (L.) Spring – 17; I; 09-254

Selaginella rupestris (L.) Spring – 9; I; 08-147

MONILOPHYTA

Aspleniaceae

Asplenium montanum Willd. – 11; O; *08-692*

Asplenium platyneuron (L.) Britton, Sterns, & Poggenb. – 2; F; *08-278*

Asplenium rhizophyllum L. ○ – 3; R; *08-861*

Asplenium trichomanes L. ssp. *trichomanes* – 11; O; *08-02*

Athyriaceae

Athyrium asplenioides (Michx.) A.A. Eaton – 3; F; *08-1345*

Deparia acrostichoides (Sw.) M. Kato – 16; O; *08-1146*

Diplazium pycnocarpon (Spreng.) M. Broun ○ – 3; S; *08-758*

Blechnaceae

Woodwardia areolata (L.) T. Moore – 25; V; *10-427*

Cystopteridaceae

Cystopteris protrusa (Weath.) Blasdell – 3; O; *08-691*

Dennstaedtiaceae

Dennstaedtia punctilobula (Michx.) T. Moore – 7; A; *08-276*

Pteridium aquilinum (L.) Kuhn var. *latiusculum* (Desv.) Underw. ex A. Heller – 22; F; *08-1111*

Dryopteridaceae

Dryopteris carthusiana (Vill.) H.P. Fuchs ○ – 3; V; *05-1719*

Dryopteris cristata (L.) A. Gray – 18; S; *08-1263*

Dryopteris goldiana (Hook. ex Goldie) A. Gray ○ – 3; R; *08-862*

Dryopteris intermedia (Muhl. ex Willd.) A. Gray – 7; F; *08-1091*

Dryopteris marginalis (L.) A. Gray – 7; F; *08-705*

Polystichum acrostichoides (Michx.) Schott – 2; F; *08-1073*

Equisetaceae

Equisetum arvense L. ○ – 14; O; *09-155*

Equisetum hyemale L. ssp. *affine* (Engelm.) Calder & Roy L. Taylor ○ – 16; V; *10-19*

Lygodiaceae

Lygodium palmatum (Bernh.) Sw. ○ – 22; S; *13-157*

Onocleaceae

Onoclea sensibilis L. var. *sensibilis* ○ – 14; F; *05-1720*

Polypodium virginianum L. – 3; U; *FSE-CVS*

Ophioglossaceae

Botrypus virginianus (L.) Holub – 3; O; *08-172*

Sceptridium biternatum (Savigny) Lyon – 2; S; *09-1073*

Sceptridium dissectum (Spreng.) Lyon fo. *dissectum* – 21; S; *09-1169*

Sceptridium dissectum (Spreng.) Lyon fo. *obliquum* (Muhl. in Willd.) Weakley ined. – 21; I; *09-1092*

Sceptridium oneidense (Gilbert) Holub – 17; R; *09-05*

Osmundaceae

Osmunda claytoniana L. var. *claytoniana* – 18; O; *08-693*

Osmunda regalis L. var. *spectabilis* (Willd.) A. Gray – 17; I; *08-573*

Osmundastrum cinnamomeum (L.) C. Presl – 18; O; *08-206*

Polypodiaceae

Pleopeltis polypodioides (L.) E.G. Andrews & Windham ssp. *michauxiana* (Weath.) E.G. Andrews & Windham ○ – 3; V; *10-20*

Polypodium appalachianum Haufler & Windham – 3; O; *08-05*

Pteridaceae

Adiantum pedatum L. – 3; O; *09-152*

Thelypteridaceae

Phegopteris hexagonoptera (Michx.) Fée – 3; I; *08-761*

Thelypteris noveboracensis (L.) Nieuwl. – 3; F; *08-896*

Thelypteris palustris Schott var. *pubescens* (G. Lawson) Fernald – 17; I; *08-954*

Thelypteris simulata (Davenp.) Nieuwl. – 18; V; *08-1261*

Woodsiaceae

Woodsia appalachiana T.M.C. Taylor – 10; S; *10-401*

Woodsia ilvensis (L.) R. Brown – 10; X; *L.E. Hicks 2230* [NCU, 2 August 1956]

Woodsia obtusa (Spreng.) Torr. ssp. *obtusa* – 10; F; *08-774*

ACROGYMNOSPERMAE

Cupressaceae

†*Callitropsis* ×*leylandii* (A. B. Jacks. & Dallim.) D.P. Little – 24; S; *10-01*

†*Chamaecyparis lawsoniana* (A. Murray) Parl. – 23; V; *10-06*

†*Chamaecyparis pisifera* Siebold & Zucc. – 23; V; *10-436*

†*Cunninghamia lanceolata* (Lamb.) Hook. – 24; R; *10-07*

Juniperus virginiana L. var. *virginiana* ○ – 21; I; *08-1130*

†*Juniperus horizontalis* Moench – 24; R; *10-160*

†*Platycladus orientalis* (L.) Franco – 24; I; *12-07*

Δ*Taxodium distichum* (L.) Rich. – 24; V; *08-997*

Δ*Thuja occidentalis* L. – 23; S; *10-23*

Pinaceae

†*Abies concolor* (Gord. & Glend.) Lindl. ex Hildebr. – 19; R; *05-2305*

**Abies firma* Siebold & Zucc. + – 22; V; *10-408*

Δ*Abies fraseri* (Pursh) Poir. – 19; A; *10-78*

†*Picea abies* (L.) H. Karst. – 23; S; *09-91*

†*Picea pungens* Engelm. – 24; R; *10-02*

Δ*Picea rubens* Sarg. – 23; R; *10-437*

Δ*Pinus palustris* Mill. – 24; V; *10-478*

Pinus pungens Lamb. – 10; I; *08-1330*

Pinus rigida Mill. – 8; O; *08-1361*

Pinus strobus L. – 19; F; *08-947*

Pinus virginiana Mill. ○ – 8; F; *08-1352*

Tsuga canadensis (L.) Carrière – 2; F; *08-1283*

Tsuga caroliniana Engelm. – 4; S; *09-1107*

Taxaceae
†*Taxus baccata* L. – 23; V; *10-03*

ANGIOSPERMAE—Monocotyledoneae

Acoraceae
**Acorus calamus* L. – 17; V; *09-500*

Agavaceae
Camassia scilloides (Raf.) Cory ○ – 21; V; *10-131*
Yucca flaccida Haw. ○ – 21; F; *08-381*
^*Yucca gloriosa* L. ○ – 23; V; *10-244*

Alismataceae
Sagittaria australis (J.G. Sm.) Small ○ – 18; V; *08-1269*
Sagittaria latifolia Willd. var. *pubescens* (Muhl. ex Nutt.) J.G. Sm. – 14; I; *08-557*

Amaryllidaceae
***Allium ampeloprasum* L. – 21; R; *10-386*
Allium canadense L. var. *canadense* ○ – 21; I; *09-622*
Allium tricoccum Aiton ○ – 3; I; *09-619*
***Allium vineale* L. – 21; F; *09-621*
†*Leucojum aestivum* L. – 24; V; *12-02*
**Narcissus* ×*incomparabilis* Mill. (pro sp.) ○ – 22; R; *09-59*
†*Narcissus* ×*medioluteus* Mill. (pro sp.) – 24; I; *12-08*
**Narcissus poeticus* L. ○ – 21; R; *11-58*
**Narcissus pseudonarcissus* L. ○ – 21; O; *08-07*

Araceae
Arisaema dracontium (L.) Schott – 17; U; *FSE-CVS*
Arisaema triphyllum (L.) Schott ssp. *pusillum* (Peck) Huttl. ○ – 3; R; *09-179*
Arisaema triphyllum (L.) Schott ssp. *quinatum* (Nutt.) Huttl. – 3; R; *P.D. McMillan 2668* [NCU, 23 August 1997]
Arisaema triphyllum (L.) Schott ssp. ***stewardsonii*** (Britton) Huttl. – 18; I; *08-355*
Arisaema triphyllum (L.) Schott ssp. *triphyllum* – 3; F; *09-168*
Lemna minor L. ○ – 25; V; *09-1112*
Orontium aquaticum L. – 17; V; *09-124*
Symplocarpus foetidus (L.) Salisb. ex W.P.C. Barton – 18; A; *08-192*

Asparagaceae
**Asparagus officinalis* L. ○ – 22; S; *06-182*

Colchicaceae
Uvularia grandiflora Sm. ○ – 3; O; *09-164*
Uvularia perfoliata L. – 3; I; *09-927*
Uvularia puberula Michx. var. *puberula* – 3; F; *09-116*
Uvularia sessilifolia L. ○ – 3; V; *11-18*

Commelinaceae
***Commelina communis* L. var. *communis* – 22; A; *08-658*
***Murdannia keisak* (Hassk.) Hand.-Mazz. ○ – 22; V; *10-250*
Tradescantia ohiensis Raf. – 22; V; *10-280*
Tradescantia subaspera Ker Gawl. – 3; F; *09-181*

Cyperaceae
Bulbostylis capillaris (L.) Kunth ex C.B. Clarke – 21; S; *09-741*
Carex abscondita Mack. – 3; U; *FSE-CVS*
Carex aestivaliformis Mack. ++ – 1; V; *P.D. McMillan 1866* [CLEMS, 5 August 1996]
Carex aestivalis M.A. Curtis ex A. Gray – 7; I; *08-708*
Carex aggregata Mack. – 21; I; *10-213*
Carex albicans Willd. ex Spreng. – 7; O; *09-418*
Carex albursina E. Sheld. ○ – 3; S; *09-233*
Carex allegheniensis Mack. ○ – 18; I; *08-892*
Carex amphibola Steud. – 3; F; *10-284*
Carex annectens (E.P. Bicknell) E.P. Bicknell – 18; I; *08-371*
Carex appalachica J.M. Webber & P.W. Ball ○ – 3; F; *08-177*
Carex atlantica L.H. Bailey – 17; O; *09-512*
Carex baileyi Britton – 18; S; *09-549*
Carex blanda Dewey – 3; O; *08-372*
Carex brevior (Dewey) Lunnell ○ – 21; V; *10-189*
Carex bromoides Willd. ssp. *montana* Naczi ○ – 16; R; *11-60*
Carex brunnescens (Pers.) Poir. var. *sphaerostachya* (Tuck.) Kük. – 1; V; *10-195*
Carex bullata Schkuhr ex Willd. – 18; I; *09-637*
Carex buxbaumii Wahlenb. – 17; R; *09-499*
Carex canescens L. var. *canescens* ○ – 25; V; *10-300*
Carex cephalophora Muhl. ex Willd. – 21; F; *08-327*
Carex communis L.H. Bailey var. *communis* – 3; F; *11-20*
Carex conoidea Schkuhr ex Willd. ○ – 17; V; *09-246*
Carex crebriflora Wiegand – 3; U; *FSE-CVS*
Carex crinita Lam. var. *crinita* ○ – 18; R; *09-255*
Carex debilis Michx. – 7; F; *10-220*
Carex digitalis Willd. var. *digitalis* – 7; I; *10-155*
Carex echinata Murray ssp. *echinata* – 17; S; *09-216*
Carex flexuosa Muhl. ex Willd. ○ – 17; R; *08-554*
Carex folliculata L. – 18; I; *08-102*
Carex frankii Kunth ○ – 21; R; *11-122*
Carex glaucodea Tuck. ex Olney ○ – 6; V; *10-202*
Carex gracillima Schwein. – 3; I; *09-235*
Carex gracillima Schwein. x *C. virescens* Muhl. ex Willd. [tentative] ○ – 2; R; *09-336*
**Carex gravida* L.H. Bailey ○ – 22; R; *10-192*
Carex gynandra Schwein. – 18; F; *08-510*
Carex hirsutella Mack. ○ – 21; O; *10-341*
Carex intumescens Rudge var. *intumescens* – 18; F; *08-166*
Carex laevivaginata (Kük.) Mack. – 18; R; *09-376*
Carex laxiculmis Schwein. var. *copulata* (L.H. Bailey) Fernald ○ – 3; I; *09-394*
Carex laxiculmis Schwein. var. *laxiculmis* ○ – 3; R; *10-176*
Carex laxiflora Lam. – 3; F; *08-274*
Carex leptalea Wahlenb. var. *harperi* (Fernald) Weath. & Griscom ○ – 17; I; *10-336*
Carex leptalea Wahlenb. var. *leptalea* – 17; R; *09-474*
Carex leptonervia (Fernald) Fernald – 3; V; *09-245*
Carex longii Mack. ○ – 18; I; *09-475*
Carex lupulina Muhl. ex Willd. ○ – 14; R; *10-405*
Carex lurida Wahlenb. – 21; F; *08-364*
Carex mesochorea Mack. ○ – 21; S; *10-175*
Carex misera Buckley – 11; U; *FSE-CVS*
Carex molestiformis Reznicek & P. Rothr. + – 21; V; *10-340*
Carex muehlenbergii Schkuhr ex Willd. var. *enervis* W. Boott – 2; R; *10-249*
Carex nigromarginata Schwein. – 2; S; *10-38*
Carex normalis Mack. – 21; O; *09-684*
Carex oligocarpa Schkuhr ex Willd. ○ – 3; V; *11-74*
Carex pensylvanica Lam. – 7; F; *08-150*
Carex plantaginea Lam. – 3; S; *10-90*
Carex platyphylla J. Carey ○ – 3; R; *09-352*
Carex prasina Wahlenb. – 16; I; *09-229*
Carex radiata (Wahlenb.) Small – 21; R; *09-420*
Carex retroflexa Muhl. ex Willd. ○ – 2; R; *10-219*
Carex reznicekii Werier ○ – 21; S; *10-39*
Carex rosea Schkuhr ex Willd. – 3; O; *08-351*
Carex rugosperma Mack. ○ – 10; V; *09-450*
Carex ruthii Mack. ○ – 18; V; *09-607*
Carex scabrata Schwein. ○ – 16; S; *09-613*
Carex scoparia Schkuhr ex Willd. var. *scoparia* – 18; F; *09-600*
Carex sp. nov. – 10; S; *09-207*
Carex sparganioides Muhl. ex Willd. – 21; V; *09-569*
Carex stipata Muhl. ex Willd. var. *maxima* Chapm. ○ – 18; V; *09-375*

Carex stipata Muhl. ex Willd. var. *stipata* – 16; I; *09-232*
Carex striatula Michx. ○ – 3; S; *10-203*
Carex stricta Lam. – 17; A; *09-185*
Carex styloflexa Buckley – 17; I; *09-120*
Carex swanii (Fernald) Mack. – 5; F; *08-1353*
Carex texensis (L.H. Bailey) L.H. Bailey ○ – 3; I; *08-239*
Carex tonsa (Fernald) E.P. Bicknell ○ – 21; O; *10-36*
Carex torta Boott ○ – 14; R; *09-83*
Carex tribuloides Wahlenb. var. *tribuloides* ○ – 21; R; *09-614*
Carex trichocarpa Muhl. ex Willd. ○ – 21; R; *08-342*
Carex umbellata Schkuhr ex Willd. ○ – 21; O; *09-247*
Carex utriculata Boott ○ – 17; V; *P.D. McMillan 3562* [MICH, 1999]
Carex venusta Dewey – 17; U; *FSE-CVS*
Carex vesicaria L. ○ – 17; V; *P.D. McMillan 3755-b* [NC State Museum of Natural Sciences, 10 July 1999]
Carex virescens Muhl. ex Willd. – 1; O; *08-553*
Carex vulpinoidea Michx. – 21; O; *08-247*
Carex willdenowii Schkuhr ex Willd. ○ – 7; V; *09-328*
Carex woodii Dewey – 3; I; *11-72*
Cladium mariscoides (Muhl.) Torr. – 17; X; *A.E. Radford 38337* [NCU, 31 July 1958]
Cyperus bipartitus Torr. – 25; F; *08-1097*
Cyperus esculentus L. var. *leptostachyus* Boeck. ○ – 22; O; *10-465*
Cyperus flavescens L. – 14; I; *09-1041*
‡*Cyperus iria* L. ○ – 24; V; *05-1770*
Cyperus lancastriensis Porter ex A. Gray ○ – 21; R; *09-783*
Cyperus lupulinus (Spreng.) Marcks var. *lupulinus* – 21; O; *09-713*
Cyperus lupulinus (Spreng.) Marcks var. *macilentus* (Fernald) A. Haines – 21; S; *A.E. Radford 38287* [NCU, 31 July 1958]
Cyperus refractus Engelm. ex Boeckeler ○ – 21; V; *11-136*
Cyperus retrorsus Chapm. ○ – 9; S; *09-954*
Cyperus strigosus L. – 22; A; *10-455*
Dulichium arundinaceum (L.) Britton var. *arundinaceum* – 18; V; *A.E. Radford 40979* [NCU, 27 September 1958]
Eleocharis acicularis (L.) Roem. & Schult. – 25; S; *10-391*
Eleocharis obtusa (Willd.) Schult. – 22; F; *08-516*
Eleocharis palustris (L.) Roem. & Schult. ○ – 25; V; *10-392*
Eleocharis tenuis (Willd.) Schult. var. *pseudoptera* (Weath. ex Svenson) Svenson ○ – 17; R; *09-696*
Eleocharis tenuis (Willd.) Schult. var. *tenuis* – 21; F; *08-528*
Eleocharis tuberculosa (Michx.) Roem. & Schult. – 17; V; *09-882*
Eriophorum virginicum L. – 17; S; *08-1226*
Fimbristylis autumnalis (L.) Roem. & Schult. – 22; S; *09-976*
Kyllinga gracillima Miq. ○ – 25; I; *08-1285*
Kyllinga pumila Michx. – 25; I; *08-842*
Rhynchospora alba (L.) Vahl – 17; R; *08-587*
Rhynchospora capitellata (Michx.) Vahl – 22; F; *10-451*
Rhynchospora globularis (Chapm.) Small – 17; U; *FSE-CVS*
Rhynchospora gracilenta A. Gray – 17; V; *08-1228*
Rhynchospora recognita (Gale) Kral – 17; S; *09-787*
Schoenoplectus purshianus (Fernald) M.T. Strong – 25; O; *08-1284*
Schoenoplectus tabernaemontani (C.C. Gmel.) Palla ○ – 21; I; *06-197*
Scirpus atrovirens Willd. – 21; U; *FSE-RAB*
Scirpus cyperinus (L.) Kunth – 21; O; *06-194*
Scirpus expansus Fernald – 21; F; *08-509*
Scirpus georgianus R.M. Harper – 21; R; *10-379*
Scirpus hattorianus Makino ○ – 21; O; *09-800*
Scirpus polyphyllus Vahl – 21; O; *08-1271*
Scleria muehlenbergii Steud. – 17; R; *11-130*
Scleria pauciflora Muhl. ex Willd. var. *pauciflora* ○ – 9; S; *09-610*
Scleria triglomerata Michx. ○ – 17; R; *09-697*

Dioscoreaceae
***Dioscorea polystachya* Turcz. ○ – 23; R; *08-1052*
Dioscorea villosa L. – 7; F; *08-1320*

Eriocaulaceae
Eriocaulon decangulare L. var. *decangulare* – 17; R; *08-740*

Heloniadaceae
Chamaelirium luteum (L.) A. Gray ○ – 3; I; *09-224*

Hostaceae
∞*Hosta ventricosa* (Salisb.) Stearn ○ – 22; V; *11-126*

Hyacinthaceae
∞*Chionodoxa luciliae* Boiss. + – 24; V; *11-06*
∞*Hyacinthoides ×massartiana* Geerinck + – 14; V; *09-132*
**Muscari botryoides* (L.) Mill. ○ – 21; S; *10-32*
***Ornithogalum umbellatum* L. ○ – 21; S; *08-121*

Hydrocharitaceae
Elodea canadensis Michx. ○ – 13; I; *08-450*
Vallisneria americana Michx. ○ – 13; R; *08-464*

Hypoxidaceae
Hypoxis hirsuta (L.) Coville – 21; O; *09-200*

Iridaceae
∞*Crocus vernus* (L.) Hill ++ – 24; I; *12-01*
∞*Crocus tommasianus* Herbert ++ – 24; V; *10-10*
∞*Gladiolus ×gandavensis* Van Houtte ○ – 21; V; *08-819*
Iris cristata Aiton – 7; O; *08-195*
†*Iris germanica* L. – 24; S; *08-75*
†*Iris pallida* Lam. in Lam. et al. – 24; S; *08-83*
***Iris pseudacorus* L. ○ – 22; I; *10-150*
**Iris sanguinea* Hornem. ex Donn ○ – 21; I; *09-470*
Iris verna L. var. *smalliana* Fernald ex M.E. Edwards ○ – 5; I; *09-226*
Iris virginica L. var. *shrevei* (Small) E.S. Anderson ○ – 25; V; *09-463*
Sisyrinchium angustifolium Mill. – 21; F; *08-155*
Sisyrinchium atlanticum E.P. Bicknell – 17; O; *09-498*
Sisyrinchium montanum Greene var. *crebrum* Fernald – 21; U; *NCNHP*
Sisyrinchium mucronatum Michx. – 17; U; *FSE-CVS*

Juncaceae
Juncus acuminatus Michx. – 14; F; *08-456*
Juncus biflorus Elliott – 21; V; *10-339*
Juncus brevicaudatus (Engelm.) Fernald ○ – 17; S; *09-975*
Juncus bufonius L. var. *bufonius* ○ – 17; V; *09-1052*
Juncus canadensis J. Gay ex Laharpe – 17; U; *FSE-CVS*
Juncus coriaceus Mack. – 22; V; *10-441*
Juncus debilis A. Gray – 22; U; *FSE-RAB*
Juncus dichotomus Elliott – 21; S; *10-394*
Juncus effusus L. ssp. *solutus* (Fernald & Wiegand) Hämet-Ahti – 21; A; *11-212*
Juncus gymnocarpus Coville – 16; V; *09-1101*
Juncus longii Fernald ○ – 17; S; *09-811*
Juncus marginatus Rostk. – 17; F; *09-704*
Juncus pylaei Laharpe ○ – 21; R; *09-606*
Juncus secundus P. Beauv. ex Poir. – 9; V; *09-609*
Juncus subcaudatus (Engelm.) Coville & Blake – 17; F; *09-974*
Juncus tenuis Willd. – 21; F; *09-703*
Luzula acuminata Raf. var. *carolinae* (S. Watson) Fernald – 3; O; *08-158*
Luzula echinata (Small) F. J. Herm. – 3; F; *08-148*
Luzula multiflora (Ehrh.) Lej. var. *multiflora* ○ – 3; S; *08-254*

Liliaceae
Clintonia umbellulata (Michx.) Morong – 3; S; *09-668*
Erythronium americanum Ker Gawl. ssp. *americanum* – 3; S; *08-16*
Erythronium umbilicatum C.R. Parks & Hardin ssp. *umbilicatum* – 3; O; *09-10*
Lilium canadense L. var. ***editorum*** Fernald – 21; S; *09-760*
Lilium grayi S. Watson – 21; S; *09-573*
∞*Lilium lancifolium* Thunb. ○ – 22; R; *08-656*
Lilium michauxii Poir. – 8; O; *08-820*

Lilium superbum L. – 21; F; *09-791*
Medeola virginiana L. – 3; O; *09-400*
Prosartes lanuginosa (Michx.) D. Don – 3; O; *11-153*

Melanthiaceae
Amianthium muscitoxicum (Walter) A. Gray – 7; O; *03-14*
Stenanthium gramineum (Ker Gawl.) Morong var. ***robustum*** (S. Watson) Fernald – 17; S; *08-734*
Veratrum parviflorum Michx. ○ – 7; S; *08-1310*
Veratrum virginicum (L.) Aiton – 17; S; *07-622*
Veratrum viride Aiton – 16; I; *11-118*

Nartheciaceae
Aletris farinosa L. – 22; I; *08-386*

Orchidaceae
Aplectrum hyemale (Muhl. ex Willd.) Nutt. – 7; I; *09-15*
Arethusa bulbosa L. – 17; U; *NCNHP*
Calopogon tuberosus (L.) Britton, Sterns, & Poggenb. var. *tuberosus* – 17; R; *09-508*
Cleistesiopsis bifaria (Fernald) Pansarin & F. Barros ○ – 2; V; *10-330*
Corallorhiza odontorhiza (Willd.) Poir. ○ – 2; S; *08-1066*
Cypripedium acaule Aiton – 5; I; *10-190*
Galearis spectabilis (L.) Raf. – 3; I; *09-157*
Goodyera pubescens (Willd.) R. Brown – 3; F; *11-152*
Goodyera repens (L.) R. Brown ○ – 8; V; *09-1050*
Hexalectris spicata (Walter) Barnhart var. ***spicata*** – 6; V; *09-784*
Isotria verticillata (Muhl. ex Willd.) Raf. – 2; V; *J.L. Michael 736* [NCU, 25 June 1968]
Liparis ×jonesii S. Bentley ○ – 17; X; *S. Bentley s.n.* [VPI, 11 June 1995]
Liparis liliifolia (L.) Rich. ex Ker Gawl. – 7; I; *09-638*
Liparis loeselii (L.) Rich. – 25; R; *09-471*
Listera smallii Wiegand ○ – 8; R; *10-331*
Malaxis unifolia Michx. – 2; V; *J.L. Michael 1219* [NCU, 7 August 1968]
Platanthera ciliaris (L.) Lindl. – 18; R; *10-447*
Platanthera clavellata (Michx.) Luer – 17; S; *11-129*
Platanthera grandiflora (Bigelow) Lindl. – 17; U; *NCNHP*
Platanthera lacera (Michx.) G. Don – 17; S; *09-707*
Platanthera orbiculata (Pursh) Lindl. – 3; X; *H.R. Totten s.n.* [NCU, 15 August 1937]
Platanthera psycodes (L.) Lindl. – 3; R; *J.L. Michael 792* [NCU, 25 June 1968]
Pogonia ophioglossoides (L.) Ker Gawl. – 17; R; *09-507*
Spiranthes cernua (L.) Rich. – 22; O; *08-1338*
Spiranthes lacera (Raf.) Raf. var. *gracilis* (Bigelow) Luer – 21; S; *08-933*
Spiranthes lucida (H.H. Eaton) Ames – 25; V; *09-449*
Spiranthes tuberosa Raf. – 21; U; *FSE-RAB*
Spiranthes vernalis Engelm. & A. Gray – 21; R; *08-1202*
Tipularia discolor (Pursh) Nutt. – 6; O; *09-887*

Poaceae
***Agrostis capillaris* L. – 21; R; *08-904*
***Agrostis gigantea* Roth – 22; F; *08-488*
Agrostis perennans (Walter) Tuck. – 7; F; *08-1181*
**Agrostis stolonifera* L. – 14; R; *08-521*
Agrostis scabra Willd. – 21; V; *09-740*
**Alopecurus pratensis* L. ○ – 22; V; *09-192*
Andropogon elliottii Chapm. ○ – 22; S; *09-384*
Andropogon gerardii Vitman – 21; I; *08-795*
Andropogon glomeratus (Walter) Britton, Sterns, & Poggenb. var. *glomeratus* – 17; I; *08-1229*
Andropogon ternarius Michx. var. *ternarius* ○ – 21; R; *08-1249*
Andropogon virginicus L. var. *virginicus* – 21; A; *08-1196*
**Anthoxanthum aristatum* Boiss. – 21; U; *FSE-CVS*
**Anthoxanthum odoratum* L. – 22; F; *08-169*
Aristida dichotoma Michx. – 8; S; *09-1088*
Aristida purpurascens Poir. ○ – 8; S; *09-1089*
***Arrhenatherum elatius* (L.) J. Presl & C. Presl var. *elatius* – 21; F; *09-368*
***Arthraxon hispidus* (Thunb.) Makino var. *hispidus* ○ – 25; O; *09-1077*
**Avena sativa* L. ○ – 20; V; *09-544*
Avenella flexuosa (L.) Drejer – 10; I; *08-238*
Brachyelytrum erectum (Schreb. ex Spreng.) P. Beauv. ○ – 3; O; *08-1137*
**Bromus commutatus* Schrad. – 22; O; *08-360*
**Bromus hordeaceus* L. ssp. *hordeaceus* ○ – 22; R; *05-195*
***Bromus inermis* Leyss. ○ – 22; O; *09-430*
**Bromus japonicus* Thunb. ex Murray ○ – 22; F; *08-323*
Bromus latiglumis (Shear) Hitchc. – 14; R; *06-227*
Bromus nottowayanus Fernald ○ – 3; I; *08-801*
Bromus pubescens Muhl. ex Willd. – 3; U; *FSE-CVS*
***Bromus racemosus* L. – 22; V; *10-320*
**Bromus sterilis* L. ○ – 22; V; *10-136*
***Bromus tectorum* L. – 21; O; *09-147*
Calamagrostis canadensis (Michx.) P. Beauv. var. ***canadensis*** – 17; V; *09-579*
Calamagrostis coarctata Eaton – 17; I; *08-736*
Chasmanthium laxum (L.) H.O. Yates ○ – 5; V; *11-244*
Cinna arundinacea L. ○ – 18; I; *08-1094*
Coleataenia anceps (Michx.) Soreng ssp. *anceps* ○ – 21; O; *09-1123*
***Cynodon dactylon* (L.) Pers. var. *dactylon* ○ – 24; S; *08-455*
***Dactylis glomerata* L. – 21; A; *08-302*
Danthonia compressa Austin ex Peck ○ – 7; F; *09-669*
Danthonia sericea Nutt. ○ – 5; S; *09-627*
Danthonia spicata (L.) P. Beauv. ex Roem. & Schult. – 10; I; *09-894*
Deschampsia cespitosa (L.) P. Beauv. ssp. ***glauca*** (Hartm.) Hartm. ○ – 17; V; *09-589*
Dichanthelium acuminatum (Sw.) Gould & C.A. Clark var. *fasciculatum* (Torr.) Freckmann – 21; O; *09-700*
Dichanthelium acuminatum (Sw.) Gould & C.A. Clark var. *lindheimeri* (Nash) Gould & C.A. Clark – 21; V; *H.L. Blomquist 9932* [DUKE, 6 September 1937]
Dichanthelium annulum (Ashe) LeBlond ○ – 3; V; *09-570*
Dichanthelium boreale (Nash) Freckmann ○ – 17; V; *08-575*
Dichanthelium boscii (Poir.) Gould & C.A. Clark – 15; F; *09-571*
Dichanthelium clandestinum (L.) Gould – 21; A; *08-491*
Dichanthelium commutatum (Schult.) Gould var. *ashei* (T.G. Pearson ex Ashe) Mohlenbr. ○ – 7; R; *10-199*
Dichanthelium commutatum (Schult.) Gould var. *commutatum* – 7; O; *08-803*
Dichanthelium depauperatum (Muhl.) Gould ○ – 21; R; *09-490*
Dichanthelium dichotomum (L.) Gould var. *dichotomum* – 3; O; *08-781*
Dichanthelium dichotomum (L.) Gould var. *ramulosum* (Torr.) LeBlond ○ – 21; F; *10-332*
Dichanthelium latifolium (L.) Harvill – 7; I; *10-286*
Dichanthelium laxiflorum (Lam.) Gould ○ – 21; F; *09-323*
Dichanthelium lucidum (Ashe) LeBlond – 17; O; *08-1297*
Dichanthelium meridionale (Ashe) Freckmann – 9; R; *10-346*
Dichanthelium scoparium (Lam.) Gould ○ – 21; S; *09-744*
Dichanthelium sphaerocarpon (Elliott) Gould ○ – 21; R; *09-486*
Dichanthelium spretum (Schult.) Freckmann – 17; U; *NCNHP*
Dichanthelium villosissimum (Nash) Freckmann var. *villosissimum* ○ – 21; O; *08-536*
Dichanthelium yadkinense (Ashe) Mohlenbr. ○ – 14; V; *08-1082*
Digitaria ciliaris (Retz.) Koeler ○ – 21; R; *10-456*
**Digitaria ischaemum* (Schreb.) Muhl. ○ – 14; F; *08-1118*
**Digitaria sanguinalis* (L.) Scop. – 21; A; *10-449*
***Echinochloa crusgalli* (L.) P. Beauv. var. *crusgalli* – 21; F; *08-675*
Echinochloa muricata (P. Beauv.) Fernald var. *muricata* – 21; R; *08-1186*
***Eleusine indica* (L.) Gaertn. – 22; F; *08-677*

Elymus glabriflorus (Vasey) Scribn. & C.R. Ball var. *australis* (Scribn. & C.R. Ball) J.J.N. Campb. ○ – 14; R; *08-522*
Elymus hystrix L. var. *hystrix* ○ – 7; I; *09-816*
Elymus macgregorii R.E. Brooks & J.J.N. Campb. ○ – 3; S; *09-780*
****Elymus repens*** (L.) Gould ○ – 21; A; *08-1184*
Elymus riparius Wiegand – 14; R; *10-470*
Elymus villosus Muhl. ex Willd. – 3; F; *08-802*
Elymus virginicus L. var. *virginicus* – 21; U; *FSE-CVS*
Eragrostis capillaris (L.) Nees – 22; O; *09-926*
****Eragrostis cilianensis*** (All.) Vignolo ex Janch. – 22; S; *08-966*
****Eragrostis curvula*** (Schrad.) Nees ○ – 22; S; *09-782*
Eragrostis pectinacea (Michx.) Nees ex Steud. var. *pectinacea* ○ – 21; I; *09-768*
Eragrostis pilosa (L.) P. Beauv. var. *pilosa* ○ – 22; F; *10-344*
Eragrostis spectabilis (Pursh) Steud. ○ – 21; I; *05-1878*
‡Eragrostis tef* (Zuccagni) *Trotter* + – 21; V; *09-1042*
Festuca filiformis Pourr. – 21; U; *FSE-RAB*
Festuca paradoxa Desv. – 21; U; *FSE-CVS*
Festuca rubra L. ssp. *rubra* – 24; I; *08-82*
Festuca subverticillata (Pers.) E.B. Alexeev – 18; O; *08-252*
Festuca trachyphylla (Hack.) Krajina – 21; F; *09-259*
Glyceria declinata Bréb. + – 24; V; *08-243*
Glyceria laxa (Scribn.) Scribn. – 17; O; *10-375*
Glyceria melicaria (Michx.) F.T. Hubb. – 15; I; *08-490*
Glyceria striata (Lam.) Hitchc. var. *striata* – 15; O; *10-322*
****Holcus lanatus*** L. – 21; F; *08-362*
Hordeum jubatum L. ssp. *jubatum* ○ – 22; V; *10-321*
Hordeum pusillum Nutt. ○ – 22; R; *09-150*
Hordeum vulgare L. ○ – 22; R; *09-466*
Leersia oryzoides (L.) Sw. – 17; F; *08-878*
Leersia virginica Willd. – 15; F; *08-711*
Lolium perenne L. var. *aristatum* Willd. ○ – 22; F; *08-251*
Lolium perenne L. var. *perenne* ○ – 21; R; *10-343*
Melica mutica Walter ○ – 3; V; *10-135*
****Microstegium vimineum*** (Trin.) A. Camus – 22; A; *09-940*
****Miscanthus sinensis*** Andersson var. *sinensis* ○ – 22; O; *08-1324*
****Miscanthus sinensis*** Andersson var. *variegatus* Beal ○ – 22; S; *09-1116*
Muhlenbergia frondosa (Poir.) Fernald – 14; I; *09-1033*
Muhlenbergia mexicana (L.) Trin. ○ – 22; S; *08-1355*
Muhlenbergia schreberi J.F. Gmel. var. *palustris* (Scribn.) Scribn. – 21; F; *08-1308*
Muhlenbergia schreberi J.F. Gmel. var. *schreberi* – 21; F; *08-1129*
Muhlenbergia sylvatica Torr. ex A. Gray ○ – 3; V; *10-480*
Muhlenbergia tenuiflora (Willd.) Britton, Sterns, & Poggenb. ○ – 3; O; *09-1046*
Panicum capillare L. ○ – 21; I; *09-1084*
Panicum dichotomiflorum Michx. var. *dichotomiflorum* – 21; F; *10-433*
‡Panicum miliaceum* L. ssp. *miliaceum* ○ – 22; V; *10-444*
Panicum philadelphicum Bernh. ex Trin. – 17; R; *09-951*
Panicum virgatum L. var. *cubense* Griseb. ○ – 17; S; *08-534*
Panicum virgatum L. var. *virgatum* – 17; I; *08-1166*
Paspalum dilatatum Poir. ○ – 22; I; *09-779*
Paspalum floridanum Michx. ○ – 22; S; *08-1306*
Paspalum floridanum Michx. X *P. laeve* Michx. [tentative]○ – 21; V; *09-952*
Paspalum laeve Michx. var. *laeve* – 21; F; *08-930*
Paspalum pubiflorum Rupr. ex Fourn. var. *glabrum* Vasey ex Scribn. ○ – 22; R; *11-210*
Paspalum setaceum Michx. var. *muhlenbergii* (Nash) Fernald – 21; F; *09-893*
Pennisetum alopecuroides (L.) Spreng. + – 22; R; *09-1135*
‡Pennisetum glaucum* (L.) R. Brown ○ – 20; R; *08-1139*
Phalaris arundinacea L. fo. *arundinacea* – 21; A; *08-296*
Phalaris arundinacea L. fo. *variegata* (Parn.) Druce ○ – 23; R; *09-536*
****Phleum pratense*** L. ssp. *pratense* ○ – 21; F; *09-574*
****Phyllostachys aurea*** Carrière ex Rivière & C. Rivière ○ – 14; R; *07-226*
Piptochaetium avenaceum (L.) Parodi ○ – 6; S; *10-206*
Poa alsodes A. Gray ○ – 7; R; *09-459*
****Poa annua*** L. – 22; F; *09-56*
Poa autumnalis Muhl. ex Elliott – 3; U; *FSE-RAB*
****Poa compressa*** L. ○ – 21; F; *08-312*
Poa cuspidata Nutt. ○ – 3; F; *09-41*
****Poa pratensis*** L. ssp. *pratensis* – 21; A; *11-112*
****Poa trivialis*** L. ssp. *trivialis* – 21; F; *08-250*
Saccharum brevibarbe (Michx.) Pers. var. *contortum* (Elliott) R.D. Webster ○ – 21; V; *11-251*
****Schedonorus arundinaceus*** (Schreb.) Dumort. ○ – 21; A; *11-178*
Schizachyrium scoparium (Michx.) Nash var. *scoparium* – 21; F; *08-875*
Secale cereale L. ○ – 22; F; *08-809*
****Setaria faberi*** R.A.W. Herrm. ○ – 22; F; *08-678*
****Setaria italica*** (L.) P. Beauv. ○ – 22; R; *10-432*
Setaria parviflora (Poir.) Kerguélen – 21; F; *08-757*
****Setaria pumila*** (Poir.) Roem. & Schult. ssp. *pumila* – 21; F; *09-979*
****Setaria viridis*** (L.) P. Beauv. var. *major* (Gaudin) Posp. + – 22; R; *09-1037*
****Setaria viridis*** (L.) P. Beauv. var. *viridis* ○ – 22; F; *09-1094*
Sorghastrum nutans (L.) Nash – 21; F; *08-756*
Sorghum bicolor (L.) Moench var. *bicolor* ○ – 22; R; *09-973*
****Sorghum halepense*** (L.) Pers. ○ – 22; F; *08-854*
Spartina pectinata Link – 21; S; *08-1305*
Sphenopholis intermedia (Rydb.) Rydb. ○ – 3; R; *08-257*
Sphenopholis nitida (Biehler) Scribn. – 3; O; *09-227*
Sphenopholis pensylvanica (L.) Hitchc. – 17; O; *09-415*
Sporobolus indicus (L.) R. Brown ○ – 22; S; *08-535*
Sporobolus vaginiflorus (Torr. ex A. Gray) Alph. Wood ○ – 22; I; *08-1233*
Tridens flavus (L.) Hitchc. – 21; F; *08-936*
Tripsacum dactyloides (L.) L. var. *dactyloides* ○ – 22; S; *09-919*
Triticum aestivum L. ○ – 20; O; *08-324*
Urochloa ramosa (L.) T.Q. Nguyen ○ – 22; R; *08-1116*
Vulpia myuros (L.) C. C. Gmel. ○ – 22; S; *09-629*
Vulpia octoflora (Walter) Rydb. var. *octoflora* ○ – 9; S; *09-631*
‡Zea mays* L. ssp. *mays* ○ – 20; S; *08-1000*

Pontederiaceae

Heteranthera dubia (Jacq.) MacMill. – 14; V; *A.E. Radford 44195* [NCU, 1 August 1961]

Potamogetonaceae

Potamogeton diversifolius Raf. – 25; S; *08-1287*
Potamogeton epihydrus Raf. – 13; V; *09-826*
Potamogeton foliosus Raf. var. *foliosus* – 13; V; *S.W. Leonard 2075* [NCU, 20 September 1968]

Ruscaceae

Convallaria majalis L. ○ – 23; V; *10-99*
Convallaria majuscula Greene ○ – 5; I; *09-338*
****Liriope muscari*** (Decne.) L.H. Bailey ○ – 23; S; *10-438*
Maianthemum canadense Desf. – 1; F; *10-191*
Maianthemum racemosum (L.) Link ssp. *racemosum* – 3; F; *08-479*
Polygonatum biflorum (Walter) Elliott var. *biflorum* – 3; O; *08-512*
Polygonatum biflorum (Walter) Elliott var. *commutatum* (Schultes & Schultes f.) Morong – 3; I; *09-439*
Polygonatum pubescens (Willd.) Pursh – 3; S; *11-16*

Smilacaceae

Smilax bona-nox L. – 17; U; *FSE-CVS*
Smilax glauca Walter – 21; F; *09-526*
Smilax herbacea L. – 21; F; *09-407*
Smilax hispida Raf. – 15; I; *09-992*

Smilax rotundifolia L. – 22; F; *09-529*

Trilliaceae
Trillium erectum L. – 3; U; *FSE-RAB*
Trillium sulcatum T.S. Patrick fo. *albolutescens* T.S. Patrick ○ – 3; R; *10-83*
Trillium sulcatum T.S. Patrick fo. *sulcatum* – 3; O; *08-96*
Trillium undulatum Willd. – 2; R; *09-110*

Typhaceae
Sparganium americanum Nutt. – 14; I; *08-1301*
Typha latifolia L. ○ – 16; I; *08-1250*

Xanthorrhoeaceae
**Hemerocallis fulva* (L.) L. ○ – 22; O; *08-1001*
†*Hemerocallis lilioasphodelus* L. – 23; V; *10-318*
†*Kniphofia uvaria* (L.) Oken – 22; V; *10-233*

Xyridaceae
Xyris torta Sm. in Rees – 17; R; *09-814*

ANGIOSPERMAE—Nymphaeales

Nymphaeaceae
Nuphar advena (Aiton) R. Brown ex W.T. Aiton ○ – 25; V; *10-292*
Nymphaea odorata W.T. Aiton ssp. *odorata* ○ – 25; V; *10-293*

ANGIOSPERMAE—Magnoliidae

Aristolochiaceae
Asarum canadense L. – 3; I; *09-154*
Endodeca serpentaria (L.) Raf. – 5; R; *09-1141*
Hexastylis virginica (L.) Small – 7; I; *08-104*
Isotrema macrophyllum (Lam.) C.F. Reed – 3; I; *11-73*

Calycanthaceae
Calycanthus floridus L. var. *glaucus* (Willd.) Torr. & A. Gray ○ – 23; V; *10-145*

Lauraceae
Lindera benzoin (L.) Blume – 3; F; *09-395*
Sassafras albidum (Nutt.) Nees – 21; O; *08-1136*

Magnoliaceae
Liriodendron tulipifera L. var. *tulipifera* – 3; A; *08-226*
Magnolia acuminata (L.) L. var. *acuminata* – 7; F; *08-1294*
Magnolia fraseri Walter – 7; F; *09-260*
Δ*Magnolia grandiflora* L. – 24; S; *08-1289*
†*Magnolia* ×*soulangiana* Soul.-Bod. – 24; V; *10-435*
Magnolia tripetala (L.) L. ○ – 18; S; *08-1303*

ANGIOSPERMAE—Eudicotyledoneae

Adoxaceae
Sambucus canadensis L. – 22; F; *08-1108*
Viburnum acerifolium L. – 5; O; *08-1069*
Viburnum cassinoides L. – 17; O; *09-423*
□*Viburnum dilatatum* Thunb. ++ – 24; V; *11-246*
Viburnum nudum L. – 18; S; *09-198*
†*Viburnum opulus* L. var. *opulus* – 23; S; *10-146*
∞*Viburnum plicatum* Thunb. ○ – 24; V; *11-247*
Viburnum prunifolium L. ○ – 15; O; *09-109*
∞*Viburnum rhytidophyllum* Hemsl. ○ – 23; V; *10-82*

Altingiaceae
^*Liquidambar styraciflua* L. ○ – 24; V; *09-928*

Amaranthaceae
**Amaranthus albus* L. ○ – 20; R; *08-813*
**Amaranthus hybridus* L. – 22; I; *08-812*
**Amaranthus palmeri* S. Watson ○ – 22; V; *10-468*
**Amaranthus retroflexus* L. ○ – 20; V; *08-814*
**Amaranthus spinosus* L. ○ – 20; S; *08-1126*
‡*Celosia argentea* L. ○ – 22; V; *11-142*
Chenopodium album L. – 21; F; *08-1024*
Chenopodium simplex (Torr.) Raf. ○ – 11; S; *08-699*
Dysphania ambrosioides* (L.) Mosyakin & Clemants – 22; S; *05-1716

Anacardiaceae
Rhus copallinum L. var. *latifolia* Engl. – 22; F; *08-822*
Rhus glabra L. – 22; F; *08-823*
Rhus typhina L. – 22; S; *08-972*
Toxicodendron radicans (L.) Kuntze var. *radicans* – 22; F; *11-194*
Toxicodendron vernix (L.) Kuntze – 18; S; *08-1165*

Apiaceae
**Aegopodium podagraria* L. ○ – 22; I; *09-429*
Angelica triquinata Michx. ○ – 3; R; *09-968*
Angelica venenosa (Greenway) Fernald – 21; I; *09-761*
Angelica atropurpurea L. – 21; U; *NCNHP*
**Anthriscus sylvestris* (L.) Hoffm. ssp. *sylvestris* + – 22; V; *08-217*
Cicuta maculata L. var. *maculata* – 17; O; *08-1290*
Conium maculatum* L. – 20; I; *08-321
Cryptotaenia canadensis (L.) DC. – 3; O; *08-356*
Daucus carota* L. – 21; A; *08-668
Eryngium integrifolium Walter – 17; V; *A.E. Radford 41022* [NCU, 27 September 1958]
Heracleum maximum W. Bartram ○ – 15; S; *09-416*
Ligusticum canadense (L.) Britton – 3; S; *09-656*
Osmorhiza claytonii (Michx.) C.B. Clarke – 3; F; *09-386*
Osmorhiza longistylis (Torr.) DC. – 3; O; *09-146*
Oxypolis rigidior (L.) Raf. – 17; O; *08-797*
Pastinaca sativa* L. – 22; S; *09-764
‡*Petroselinum crispum* (Mill.) Nyman ex A.W. Hill ○ – 24; V; *11-149*
Sanicula canadensis L. var. *canadensis* – 2; F; *08-714*
Sanicula odorata (Raf.) Pryer & Phillippe ○ – 3; R; *09-393*
Sanicula trifoliata E.P. Bicknell – 3; S; *09-618*
Thaspium barbinode (Michx.) Nutt. ○ – 3; O; *09-411*
Thaspium trifoliatum (L.) A. Gray var. *aureum* (L.) Britton ○ – 3; F; *09-414*
Zizia aptera (A. Gray) Fernald ○ – 22; I; *10-237*
Zizia aurea (L.) W.D.J. Koch – 22; F; *09-421*
Zizia trifoliata (Michx.) Fernald – 7; O; *09-350*

Apocynaceae
Apocynum androsaemifolium L. – 21; S; *10-371*
Apocynum cannabinum L. – 21; F; *10-369*
Apocynum ×*floribundum* Greene (pro sp.) ○ – 21; V; *10-370*
Asclepias exaltata L. ○ – 7; I; *09-624*
Asclepias incarnata L. var. *pulchra* (Ehrh. ex Willd.) Pers. – 21; I; *08-571*
Asclepias quadrifolia Jacq. – 3; V; *10-236*
Asclepias syriaca L. – 21; F; *08-729*
Asclepias tuberosa L. var. *tuberosa* – 21; F; *09-751*
Vinca major* L. ○ – 24; V; *10-222
Vinca minor* L. ○ – 22; F; *09-01

Aquifoliaceae
Ilex ambigua (Michx.) Torr. – 7; U; *NCNHP*
†*Ilex cornuta* Lindl. – 23; V; *10-424*
∞*Ilex crenata* Thunb. ○ – 23; S; *10-18*
Ilex montana Torr. & A. Gray ex A. Gray – 7; F; *08-869*
Ilex opaca Aiton var. *opaca* – 7; F; *08-895*
Ilex verticillata (L.) A. Gray – 18; F; *08-1265*

Araliaceae
Aralia nudicaulis L. – 1; F; *08-193*
Aralia racemosa L. – 2; S; *10-390*
Aralia spinosa L. ○ – 21; S; *08-1329*

**Hedera helix* L. var. *helix* ○ – 23; S; *08-1281*
Hydrocotyle americana L. ○ – 16; S; *09-580*
**Hydrocotyle sibthorpioides* Lam. ○ – 24; R; *10-461*
Panax quinquefolius L. ○ – 3; S; *08-759*

Asteraceae

Achillea millefolium L. – 21; F; *09-158*
Ageratina altissima R.M. King & H. Rob. var. *altissima* – 5; I; *10-418*
Ageratina altissima R.M. King & H. Rob. var. *roanensis* (Small) Clewell & Wooten – 7; O; *08-689*
Ambrosia artemisiifolia L. – 21; A; *11-193*
Ambrosia trifida L. var. *trifida* – 21; F; *11-167*
Antennaria howellii Greene ssp. *neodioica* (Greene) R.J. Bayer ○ – 10; V; *09-447*
Antennaria parlinii Fernald ssp. *fallax* (Greene) R.J. Bayer & Stebbins ○ – 21; O; *11-59*
Antennaria parlinii Fernald ssp. *parlinii* ○ – 21; I; *09-63*
Antennaria plantaginifolia (L.) Richardson – 21; O; *09-98*
Antennaria solitaria Rydb. ○ – 2; V; *11-04*
**Anthemis arvensis* L. – 22; I; *09-378*
**Arctium lappa* L. ○ – 21; V; *09-1068*
***Arctium minus* Bernh. – 21; F; *08-670*
Arnoglossum atriplicifolium (L.) H. Rob. – 7; O; *08-1017*
∞*Artemisia ludoviciana* Nutt. ○ – 23; V; *10-453*
***Artemisia vulgaris* L. ○ – 21; F; *08-994*
**Aster tataricus* L. f. ○ – 23; R; *08-1365*
Bidens aristosa (Michx.) Britton ○ – 22; V; *09-1047*
Bidens bipinnata L. – 21; F; *08-1198*
Bidens cernua L. – 14; R; *09-1146*
Bidens connata Muhl. – 18; R; *09-1147*
Bidens frondosa L. – 21; F; *08-1304*
**Bidens polylepis* Blake – 22; O; *10-477*
Bidens vulgata Greene ○ – 22; I; *08-1009*
Brickellia eupatorioides (L.) Shinners var. *eupatorioides* – 22; X; *R.K. Godfrey 50214* [NCSC, 6 September 1949]
***Carduus acanthoides* L. ssp. *acanthoides* ○ – 21; I; *08-672*
***Carduus nutans* L. ssp. *macrolepis* (Peterm.) Kazmi ○ – 21; R; *09-825*
***Centaurea cyanus* L. ○ – 20; R; *11-68*
***Centaurea jacea* L. + – 22; S; *08-965*
**Centaurea ×moncktonii* C.E. Britton + – 21; I; *09-1002*
**Centaurea nigrescens* Willd. + – 22; V; *09-1007*
***Centaurea stoebe* L. ssp. *micranthos* (S.G. Gmel. ex Gugler) Hayek – 21; F; *09-1006*
Chrysopsis mariana (L.) Elliott – 21; O; *08-893*
***Cichorium intybus* L. – 21; F; *08-487*
***Cirsium arvense* (L.) Scop. var. *arvense* ○ – 21; R; *08-853*
***Cirsium arvense* (L.) Scop. var. *horridum* Wimm. & Grab. ○ – 21; O; *09-743*
Cirsium discolor (Muhl. ex Willd.) Spreng. – 21; F; *11-200*
***Cirsium vulgare* (Savi) Ten. – 21; F; *08-942*
Conoclinium coelestinum (L.) DC. ○ – 22; S; *08-1247*
Conyza canadensis (L.) Cronquist var. *canadensis* – 21; F; *08-1113*
Conyza canadensis (L.) Cronquist var. *pusilla* (Nutt.) Cronquist – 21; S; *10-426*
ΔCoreopsis *lanceolata* L. aff. var. *lanceolata* – 22; V; *09-1114*
‡Coreopsis *lanceolata* L. aff. var. *villosa* Michx. ○ – 22; V; *10-275*
Coreopsis major Walter var. *rigida* (Nutt.) F.E. Boynton – 5; F; *08-563*
Coreopsis pubescens Elliott var. *pubescens* – 7; F; *10-319*
Coreopsis pubescens Elliott var. *robusta* A. Gray ex Eames – 7; S; *A.E. Radford 44946* [NCU, 12 July 1966]
**Cosmos bipinnatus* Cav. ○ – 22; S; *09-1127*
**Crepis capillaris* (L.) Wallr. – 21; F; *08-700*
Doellingeria umbellata (Mill.) Nees – 17; O; *08-1173*
^***Echinacea purpurea*** (L.) Moench ○ – 21; V; *09-774*
Eclipta prostrata (L.) L. ○ – 24; V; *12-88*
Elephantopus carolinianus Raeusch. – 7; R; *06-247*
Elephantopus tomentosus L. – 2; S; *09-966*
Erechtites hieraciifolius (L.) Raf. ex DC. – 21; F; *11-196*
Erigeron annuus (L.) Pers. – 21; F; *08-318*
Erigeron philadelphicus L. var. *philadelphicus* – 21; O; *08-100*
Erigeron pulchellus Michx. var. *pulchellus* – 3; O; *08-113*
Erigeron strigosus Muhl. ex Willd. var. nov.? [sexual diploid]○ – 12; R; *09-612*
Erigeron strigosus Muhl. ex Willd. var. *strigosus* [polyploid apomict]– 21; F; *08-352*
Eupatorium album L. var. *album* ○ – 21; S; *09-925*
Eupatorium capillifolium (Lam.) Small ○ – 21; R; *11-245*
Eupatorium hyssopifolium L. ○ – 21; R; *08-1248*
Eupatorium perfoliatum L. – 21; F; *08-955*
Eupatorium pilosum Walter – 17; S; *09-964*
Eupatorium pubescens Muhl. ex Willd. ○ – 17; I; *08-1246*
Eupatorium rotundifolium L. ○ – 21; V; *09-963*
Eupatorium serotinum Michx. ○ – 21; V; *11-156*
Eupatorium sessilifolium L. var. *sessilifolium* – 7; O; *05-1746A*
Eurybia chlorolepis (E.S. Burgess) G.L. *Nesom* – 3; I; *09-890*
Eurybia divaricata (L.) G.L. Nesom – 7; F; *08-1018*
Eurybia macrophylla (L.) Cass. ○ – 3; R; *09-935*
Euthamia graminifolia (L.) Nutt. var. *nuttallii* (Greene) W. Stone ○ – 21; S; *09-980*
Eutrochium fistulosum (Barratt) E.E. Lamont – 21; F; *09-1164*
Eutrochium purpureum (L.) E.E. Lamont var. *purpureum* – 3; I; *09-1012*
Eutrochium steelei (E.E. Lamont) E.E. Lamont ○ – 3; R; *09-1162*
**Galinsoga quadriradiata* Ruiz & Pav. – 22; F; *08-380*
Gamochaeta argyrinea G.L. Nesom ○ – 24; V; *12-87*
**Gamochaeta pensylvanica* (Willd.) Cabrera ○ – 22; I; *08-1349*
Gamochaeta purpurea (L.) Cabrera ○ – 21; S; *08-143*
Helenium autumnale L. – 21; F; *08-748*
Helenium brevifolium (Nutt.) Alph. Wood – 17; V; *11-108*
Helenium flexuosum Raf. – 21; O; *08-1258*
**Helianthus annuus* L. ○ – 22; R; *09-962*
Helianthus atrorubens L. – 22; R; *09-1003*
Helianthus decapetalus L. – 7; R; *09-988*
Helianthus divaricatus L. – 10; S; *09-913*
Helianthus giganteus L. – 21; F; *08-1101*
**Helianthus maximilianii* Schrad. ○ – 21; V; *09-1034*
Helianthus microcephalus Torr. & A. Gray – 7; F; *08-1104*
Helianthus strumosus L. ○ – 22; O; *08-1100*
**Helianthus tuberosus* L. ○ – 22; S; *08-985*
Heliopsis helianthoides (L.) Sweet var. *helianthoides* – 3; I; *08-666*
**Hieracium caespitosum* Dumort. – 21; F; *08-293*
Hieracium gronovii L. – 21; O; *09-829*
Hieracium paniculatum L. – 7; O; *08-1027*
**Hieracium pilosella* L. – 22; I; *08-122*
Hieracium scabrum Michx. – 22; S; *09-923*
Hieracium venosum L. – 7; F; *09-370*
**Hypochaeris radicata* L. ○ – 21; A; *08-125*
Ionactis linariifolia (L.) Greene – 10; R; *09-1029*
Krigia virginica (L.) Willd. – 22; I; *09-88*
Lactuca biennis (Moench) Fernald ○ – 21; F; *11-170*
Lactuca canadensis L. – 22; O; *08-980*
Lactuca floridana (L.) Gaertn. ○ – 22; R; *09-1133*
**Lactuca serriola* L. – 22; F; *08-1185*
***Lapsana communis* L. ○ – 21; R; *05-765*
***Leucanthemum vulgare* Lam. – 21; F; *09-575*
Liatris spicata (L.) Willd. var. *resinosa* (Nutt.) Gaiser – 17; V; *08-548*
Liatris spicata (L.) Willd. var. *spicata* – 21; R; *09-802*
**Matricaria discoidea* DC. ○ – 21; F; *08-306*
Oclemena acuminata (Michx.) Greene ○ – 8; R; *08-1332*
Packera anonyma (Alph. Wood) W.A. Weber & Á. Löve – 21; F; *09-584*

Packera aurea (L.) Á. Löve & D. Löve – 3; A; *08-127*
Packera obovata (Muhl. ex Willd.) W.A. Weber & Á. Löve – 3; U; *FSE-CVS*
Pityopsis aspera (Shuttlew. ex Small) Small var. *adenolepis* (Fernald) Semple & Bowers – 22; R; *09-982*
Prenanthes alba L. ○ – 3; V; *11-155*
Prenanthes altissima L. ○ – 3; F; *08-1351*
Prenanthes roanensis (Chick.) Chick. – 7; R; *09-1121*
Prenanthes serpentaria Pursh – 7; R; *09-1122*
Prenanthes trifoliolata (Cass.) Fernald – 7; S; *09-1117*
Pseudognaphalium obtusifolium (L.) Hilliard & B.L. Burtt – 21; F; *08-1195*
Pyrrhopappus carolinianus (Walter) DC. ○ – 22; V; *09-918*
Rudbeckia fulgida Aiton var. *fulgida* ○ – 22; R; *09-1151*
‡*Rudbeckia hirta* L. cv. 'Gloriosa Daisy' ○ – 22; V; *08-1002*
Rudbeckia hirta L. var. *pulcherrima* Farw. – 22; F; *09-1048*
Rudbeckia laciniata L. var. *laciniata* – 21; F; *11-162*
Rudbeckia triloba L. var. *triloba* ○ – 23; R; *09-1145*
**Senecio vulgaris* L. ○ – 20; F; *08-815*
Sericocarpus asteroides (L.) Britton, Sterns, & Poggenb. – 7; S; *10-381*
Sericocarpus linifolius (L.) Britton, Sterns, & Poggenb. – 5; R; *10-349*
Silphium connatum L. – 21; S; *09-564*
Silphium perfoliatum L. – 21; S; *09-545*
Silphium reniforme Raf. ex Nutt. – 7; R; *09-1134*
Smallanthus uvedalius (L.) Mack. ex Small ○ – 22; S; *08-973*
Solidago altissima L. var. *altissima* – 21; F; *08-1307*
Solidago arguta Aiton var. *caroliniana* A. Gray – 22; F; *09-1126*
Solidago bicolor L. – 22; O; *08-1106*
Solidago canadensis L. var. *hargeri* Fernald ○ – 21; S; *09-1035*
Solidago curtisii Torr. & A. Gray – 3; F; *08-1120*
Solidago erecta Pursh – 22; S; *09-1140*
Solidago flexicaulis L. – 3; R; *09-1139*
Solidago gigantea Aiton – 21; F; *11-169*
Solidago juncea Aiton – 21; F; *08-912*
Solidago nemoralis Aiton var. *nemoralis* – 21; F; *08-968*
Solidago odora Aiton – 22; V; *09-1124*
Solidago patula Muhl. ex Willd. var. *patula* – 17; O; *08-960*
Solidago pinetorum Small – 21; I; *08-906*
Solidago puberula Nutt. var. *puberula* – 22; I; *09-1119*
Solidago roanensis Porter – 1; O; *08-934*
Solidago rugosa Mill. var. *aspera* (Aiton) Fernald – 21; F; *08-1187*
**Sonchus arvensis* L. var. *glabrescens* (Günther) Grab. & Wimm. ○ – 22; R; *08-824*
**Sonchus asper* (L.) Hill ○ – 21; F; *08-836*
**Sonchus oleraceus* L. ○ – 22; O; *08-1350*
Symphyotrichum cordifolium (L.) G.L. Nesom – 3; F; *09-1132*
Symphyotrichum dumosum (L.) G.L. Nesom var. *dumosum* – 21; O; *11-254*
Symphyotrichum lanceolatum (Willd.) G.L. Nesom var. *lanceolatum* ○ – 22; S; *09-1175*
Symphyotrichum lateriflorum (L.) Á. Löve & D. Löve var. *lateriflorum* – 22; F; *08-1259*
Symphyotrichum novae-angliae (L.) G.L. Nesom ○ – 22; S; *08-1288*
Symphyotrichum aff. *novi-belgii* (L.) G.L. Nesom [sp. or var. nov.?] ○ – 17; R; *11-259*
Symphyotrichum patens (Aiton) G.L. Nesom var. *patens* ○ – 3; I; *09-1176*
Symphyotrichum pilosum (Willd.) G.L. Nesom var. *pilosum* – 21; F; *08-941*
Symphyotrichum prenanthoides (Muhl. ex Willd.) G.L. Nesom ○ – 3; O; *09-1063*
Symphyotrichum puniceum (L.) Á. Löve & D. Löve var. *puniceum* – 21; F; *08-1211*
Symphyotrichum sp. [subsect. *Dumosi*] ○ – 21; V; *11-253*
Symphyotrichum aff. *undulatum* (L.) G.L. Nesom [sp. or var. nov.?] ○ – 22; V; *09-981*
Symphyotrichum undulatum (L.) G.L. Nesom – 22; F; *08-1205*
‡*Tagetes erecta* L. ○ – 22; R; *11-135*
‡*Tagetes patula* L. ○ – 23; V; *08-669*
**Tanacetum parthenium* (L.) Sch. Bip. ○ – 22; V; *10-355*
**Tanacetum vulgare* L. – 22; R; *10-473*
**Taraxacum erythrospermum* Andrz. ex Besser ○ – 21; R; *08-261*
**Taraxacum officinale* Weber ex F.H. Wigg. – 21; A; *08-288*
***Tragopogon dubius* Scop. ○ – 21; S; *09-452*
***Tussilago farfara* L. – 22; F; *09-09*
Verbesina alternifolia (L.) Britton ex Kearney – 21; F; *11-175*
Verbesina occidentalis (L.) Walter – 21; O; *08-925*
Vernonia noveboracensis (L.) Michx. – 21; F; *08-1286*
Xanthium strumarium L. – 21; S; *11-225*

Balsaminaceae

‡*Impatiens balsamina* L. ○ – 22; V; *11-243*
Impatiens capensis Meerb. – 15; A; *11-172*
Impatiens pallida Nutt. – 15; A; *08-1053*
‡*Impatiens walleriana* Hook. f. ○ – 24; V; *11-241*

Berberidaceae

***Berberis bealei* Fortune ○ – 23; S; *10-04*
***Berberis thunbergii* DC. ○ – 21; F; *09-61*
Caulophyllum giganteum (Farw.) Loconte & W.H. Blackwell – 3; R; *08-13*
Caulophyllum thalictroides (L.) Michx. – 3; O; *08-93*
***Nandina domestica* Thunb. ○ – 23; R; *10-242*
Podophyllum peltatum L. – 3; F; *08-97*

Betulaceae

Alnus serrulata (Aiton) Willd. – 14; F; *08-292*
Betula alleghaniensis Britton – 15; O; *08-1093*
Betula lenta L. var. *lenta* – 3; F; *08-775*
Betula nigra L. ○ – 16; V; *10-256*
**Betula pendula* Roth + – 21; R; *09-504*
Carpinus caroliniana Walter var. *virginiana* (Marshall) Fernald ○ – 15; I; *08-299*
Corylus americana Walter – 3; O; *08-1363*
Corylus cornuta Marshall var. *cornuta* – 5; I; *08-1075*
Ostrya virginiana (Mill.) K. Koch – 7; O; *09-354*

Bignoniaceae

Campsis radicans (L.) Seem. ex Bureau ○ – 22; S; *08-852*
^*Catalpa speciosa* (Warder) Warder ex Engelm. ○ – 22; S; *10-310*

Boraginaceae

***Buglossoides arvensis* (L.) I.M. Johnst. ssp. *arvensis* – 21; V; *11-17*
Cynoglossum virginianum L. var. *virginianum* ○ – 7; I; *09-335*
**Echium vulgare* L. – 22; R; *09-657*
Hackelia virginiana (L.) I.M. Johnst. – 3; I; *08-683*
Hydrophyllum canadense L. – 3; I; *09-617*
Hydrophyllum virginianum L. var. *atranthum* (Alexander) Constance – 3; O; *08-95*
**Myosotis scorpioides* L. – 14; A; *08-520*
**Myosotis sylvatica* Ehrh. ex Hoffm. ○ – 24; V; *11-56*
Phacelia dubia (L.) Trel. var. *dubia* – 22; I; *08-298*
Phacelia fimbriata Michx. ○ – 21; R; *08-242*

Brassicaceae

***Alliaria petiolata* (M. Bieb.) Cavara & Grande – 21; F; *08-317*
Arabidopsis lyrata (L.) O'Kane & Al-Shehbaz ssp. *lyrata* – 15; V; *09-151*
**Arabidopsis thaliana* (L.) Heynh. ○ – 21; S; *08-70*
**Barbarea verna* (Mill.) Asch. – 21; I; *09-24*
***Barbarea vulgaris* R. Brown – 21; F; *09-29*
Boechera canadensis (L.) Al-Shehbaz – 3; I; *09-555*
Boechera laevigata (Muhl. ex Willd.) Al-Shehbaz – 3; O; *09-39*
**Brassica juncea* (L.) Czern. ○ – 22; V; *09-654*

‡*Brassica napus* L. ○ – 20; V; *08-205*
**Brassica rapa* L. var. *rapa* ○ – 21; F; *09-42*
**Capsella bursa-pastoris* (L.) Medik. – 21; F; *08-110*
Cardamine bulbosa (Schreb. ex Muhl.) Britton, Sterns, & Poggenb. ○ – 16; R; *09-108*
Cardamine concatenata (Michx.) O. Schwarz – 3; F; *09-171*
Cardamine diphylla (Michx.) Alph. Wood – 3; U; *A.E. Radford 32742* [NCU, 2 May 1958]
Cardamine flagellifera O.E. Schulz var. *flagellifera* – 16; I; *10-86*
**Cardamine flexuosa* With. ○ – 21; R; *10-33*
**Cardamine hirsuta* L. – 22; F; *09-23*
**Cardamine impatiens* L. – 21; I; *07-145*
Cardamine parviflora L. var. *arenicola* (Britton) O.E. Schulz – 14; R; *10-96*
Cardamine pensylvanica Muhl. ex Willd. – 16; I; *10-156*
Cardamine rotundifolia Michx. ○ – 16; R; *10-159*
**Draba verna* L. – 22; O; *08-06*
***Hesperis matronalis* L. ○ – 21; I; *08-353*
†*Iberis sempervirens* L. – 24; V; *12-46*
**Lepidium campestre* (L.) R. Brown – 21; I; *08-114*
Lepidium virginicum L. var. *virginicum* – 22; F; *09-136*
‡*Lobularia maritima* (L.) Desv. ○ – 24; V; *11-146*
**Lunaria annua* L. ○ – 22; I; *09-40*
***Microthlaspi perfoliatum* (L.) F.K. Mey. ○ – 22; V; *10-165*
***Nasturtium officinale* R. Brown ○ – 24; S; *10-311*
Planodes virginicum (L.) Greene ○ – 22; V; *10-45*
***Raphanus raphanistrum* L. ○ – 21; S; *08-1031*
**Raphanus sativus* L. ○ – 20; R; *12-12*
**Rorippa palustris* (L.) Besser ssp. *palustris* – 14; S; *08-458*
**Sisymbrium officinale* (L.) Scop. – 20; O; *08-322*
**Thlaspi alliaceum* L. ○ – 22; V; *12-15*
**Thlaspi arvense* L. – 20; O; *08-154*

Buxaceae
†*Buxus sempervirens* L. – 23; I; *10-09*
∞*Pachysandra terminalis* Siebold & Zuccarini ○ – 24; S; *10-84*

Cactaceae
Opuntia humifusa (Raf.) Raf. var. *humifusa* ○ – 21; V; *09-1177*

Campanulaceae
Campanula aparinoides Pursh var. ***aparinoides*** – 17; S; *09-817*
Campanula divaricata Michx. – 10; O; *08-1033*
‡*Campanula punctata* Lam. ++ – 24; V; *09-702*
**Campanula rapunculoides* L. ○ – 22; V; *09-578*
Campanulastrum americanum (L.) Small – 3; S; *09-1008*
Lobelia cardinalis L. – 14; O; *09-1009*
Lobelia inflata L. – 21; F; *08-1064*
Lobelia puberula Michx. var. *simulans* Fernald – 21; S; *09-958*
Lobelia siphilitica L. var. *siphilitica* – 22; F; *09-1004*
Lobelia spicata Lam. var. *scaposa* McVaugh – 21; R; *09-519*
Triodanis perfoliata (L.) Nieuwl. – 21; F; *09-646*

Cannabaceae
Celtis occidentalis L. ○ – 3; R; *10-137*
Humulus lupulus L. var. *lupuloides* E. Small ○ – 15; S; *08-1150*

Caprifoliaceae
***Lonicera ×bella* Zabel ○ – 22; V; *10-100*
Lonicera canadensis Bartram ex Marshall ○ – 3; V; *09-762*
***Lonicera japonica* Thunb. – 22; A; *09-563*
***Lonicera morrowii* A. Gray ○ – 22; I; *09-130*
^*Lonicera sempervirens* L. var. *sempervirens* ○ – 24; V; *10-326*
Symphoricarpos orbiculatus Moench – 21; O; *09-648*
Triosteum aurantiacum E.P. Bicknell var. *aurantiacum* ○ – 3; V; *10-185*
Triosteum perfoliatum L. ○ – 3; R; *10-282*

Caryophyllaceae
***Arenaria serpyllifolia* L. – 22; F; *07-146*
**Cerastium brachypetalum* Desp. ○ – 20; V; *10-52*
**Cerastium fontanum* Baumg. ssp. *vulgare* (Hartm.) Greuter & Burdet – 21; F; *08-181*
**Cerastium glomeratum* Thuill. – 22; O; *10-49*
Cerastium nutans Raf. – 3; S; *09-112*
**Cerastium semidecandrum* L. – 22; I; *09-448*
***Dianthus armeria* L. ssp. *armeria* – 21; F; *08-910*
**Dianthus barbatus* L. ssp. *barbatus* ○ – 21; R; *09-776*
**Holosteum umbellatum* L. ssp. *umbellatum* ○ – 20; R; *10-103*
Minuartia glabra (Michx.) Mattf. – 9; S; *09-458*
**Myosoton aquaticum* (L.) Moench – 21; O; *08-269*
Paronychia canadensis (L.) Alph. Wood – 7; O; *08-697*
Paronychia fastigiata (Raf.) Fernald var. *paleacea* Fernald ○ – 9; V; *09-626*
Sagina decumbens (Elliott) Torr. & A. Gray ○ – 22; F; *08-349*
**Sagina procumbens* L. ○ – 24; V; *10-442*
∞*Saponaria ocymoides* L. ++ – 24; V; *12-10*
**Saponaria officinalis* L. ○ – 22; A; *08-1293*
**Scleranthus annuus* L. ○ – 20; S; *07-139*
Silene antirrhina L. – 21; O; *09-708*
**Silene armeria* L. ○ – 21; R; *09-581*
**Silene coronaria* (L.) Clairv. ○ – 22; R; *10-288*
**Silene flos-cuculi* (L.) Clairv. ssp. *flos-cuculi* + – 21; S; *07-136*
**Silene latifolia* Poir. ○ – 22; F; *05-2312*
Silene stellata (L.) W.T. Aiton – 3; O; *08-1109*
Silene virginica L. – 22; F; *08-320*
**Silene vulgaris* (Moench) Garcke ○ – 21; S; *08-1319*
Stellaria corei Shinners ○ – 3; R; *09-239*
**Stellaria graminea* L. – 21; F; *10-169*
Stellaria longifolia Muhl. ex Willd. ++ – 21; R; *10-267*
**Stellaria media* (L.) Vill. – 20; A; *10-48*
**Stellaria neglecta* Weihe ○ – 20; S; *11-15*
Stellaria pubera Michx. – 3; F; *09-142*

Celastraceae
***Celastrus orbiculatus* Thunb. – 22; F; *08-531*
***Euonymus alatus* (Thunb.) Siebold ○ – 23; V; *10-68*
Euonymus americanus L. ○ – 2; S; *10-201*
***Euonymus fortunei* (Turcz.) Hand.-Mazz. ○ – 23; I; *09-502*
†*Euonymus japonicus* Thunb. – 23; V; *10-178*

Cistaceae
Crocanthemum canadense (L.) Britton ○ – 10; S; *09-1028B*
Crocanthemum propinquum (E.P. Bicknell) E.P. Bicknell – 10; V; *09-1028A*
Lechea racemulosa Michx. – 21; F; *09-1036*

Cleomaceae
**Tarenaya hassleriana* (Chodat) Iltis ○ – 22; R; *09-1161*

Clethraceae
Clethra acuminata Michx. – 10; I; *08-717*

Convolvulaceae
Calystegia catesbeiana Pursh ssp. *catesbeiana* ○ – 7; V; *10-259*
Calystegia sepium (L.) R. Br. ssp. *appalachiana* Brummitt ○ – 21; F; *08-829*
Calystegia silvatica (Kit.) Griseb. ssp. *fraterniflora* (Mack. & Bush) Brummitt ○ – 21; O; *08-543*
***Convolvulus arvensis* L. ○ – 21; R; *08-807*
Cuscuta campestris Yunck. – 22; I; *09-1082*
Cuscuta cephalanthi Engelm. ○ – 17; V; *09-997*
Cuscuta gronovii Willd. ex Schult. ○ – 21; F; *08-1178*
**Ipomoea coccinea* L. – 21; U; *FSE-RAB*
**Ipomoea hederacea* Jacq. ○ – 20; V; *08-1144*
Ipomoea pandurata (L.) G. Mey. – 22; I; *08-473*

****Ipomoea purpurea** (L.) Roth – 22; S; *08-1115*

Cornaceae
Cornus alternifolia L. f. – 3; I; *08-151*
Cornus amomum Mill. – 14; O; *11-165*
Cornus florida L. – 3; O; *09-169*
∞*Cornus kousa* Hance ○ – 24; R; *10-223*

Crassulaceae
Hylotelephium telephioides (Michx.) H. Ohba – 10; S; *09-932*
∞*Hylotelephium telephium* (L.) H. Ohba ○ – 23; R; *09-1021*
**Sedum acre* L. ○ – 21; R; *08-467*
**Sedum sarmentosum* Bunge ○ – 24; R; *05-720*
Sedum ternatum Michx. – 3; O; *08-341*

Cucurbitaceae
‡*Cucumis sativus* L. ○ – 20; V; *08-466*
‡*Cucurbita pepo* L. ○ – 20; S; *11-124*
Echinocystis lobata (Michx.) Torr. & A. Gray – 14; V; *09-824*
Sicyos angulatus L. – 21; O; *08-1037*

Diapensiaceae
Galax urceolata (Poir.) Brummitt – 7; A; *09-521*

Diervillaceae
Diervilla lonicera Mill. ○ – 10; V; *10-197*
∞*Weigela floribunda* (Siebold & Zuccarini) K. Koch ○ – 23; R; *10-183*

Dipsacaceae
***Dipsacus fullonum* L. ○ – 20; V; *08-500*

Droseraceae
Drosera rotundifolia L. var. *rotundifolia* – 17; I; *09-879*

Ebenaceae
Diospyros virginiana L. – 7; S; *10-358*

Elaeagnaceae
***Elaeagnus pungens* Thunb. ○ – 23; V; *10-31*
***Elaeagnus umbellata* Thunb. var. *parvifolia* (Royle) C.K. Schneid. ○ – 21; S; *10-158*

Ericaceae
Chimaphila maculata (L.) Pursh – 5; F; *08-1086*
Epigaea repens L. – 8; F; *09-31*
Eubotrys recurva (Buckley) Britton – 10; F; *08-688*
Gaultheria procumbens L. – 8; O; *08-831*
Gaylussacia baccata (Wangenh.) K. Koch – 8; F; *08-538*
Hypopitys monotropa Crantz ○ – 7; I; *08-679*
Kalmia buxifolia (P.J. Bergius) Gift, Kron, & P.F. Stevens – 11; X; *B.W. Wells s.n.* [NCSC, 11 September 1929]
Kalmia carolina Small – 17; S; *09-464*
Kalmia latifolia L. – 2; A; *09-1168*
Leucothoe fontanesiana (Steud.) Sleumer ○ – 2; R; *09-251*
Lyonia ligustrina (L.) DC. var. ligustrina – 17; F; *08-547*
Menziesia pilosa (Michx. ex Lam.) Juss. ex Pers. – 7; O; *08-698*
Monotropa uniflora L. ○ – 7; F; *08-753*
Monotropsis odorata Schwein. ex Elliott – 8; V; *09-13*
Oxydendrum arboreum (L.) DC. ○ – 5; F; *09-929*
†*Pieris japonica* (Thunb.) D. Don ex G. Don – 23; I; *12-04*
Pyrola americana Sweet – 2; S; *09-759*
Rhododendron arborescens (Pursh) Torr. ○ – 15; R; *09-694*
Rhododendron calendulaceum (Michx.) Torr. – 5; F; *08-198*
Rhododendron carolinianum Rehder ○ – 7; R; *09-194*
Rhododendron catawbiense Michx. – 7; A; *09-252*
Rhododendron maximum L. – 7; A; *09-706*
Rhododendron periclymenoides (Michx.) Shinners – 2; O; *10-101*
Rhododendron viscosum (L.) Torr. – 17; S; *09-517*
Vaccinium corymbosum L. – 7; F; *09-453*
Vaccinium erythrocarpum Michx. ○ – 10; R; *08-710*
Vaccinium fuscatum Aiton – 17; I; *09-437*
Vaccinium macrocarpon Aiton – 17; S; *08-586*
Vaccinium pallidum Aiton – 8; F; *08-174*
Vaccinium simulatum Small – 3; I; *09-1150*
Vaccinium stamineum L. – 10; F; *08-782*

Euphorbiaceae
Acalypha gracilens A. Gray ○ – 22; R; *10-481*
Acalypha rhomboidea Raf. – 20; O; *11-197*
Euphorbia corollata L. – 21; R; *10-430*
**Euphorbia cyparissias* L. ○ – 22; I; *09-92*
∞*Euphorbia dulcis* L. cv. 'Chameleon' ++ – 24; V; *07-150*
**Euphorbia lathyris* L. – 22; R; *10-351*
Euphorbia maculata L. – 24; A; *08-454*
Euphorbia nutans Lag. ○ – 22; F; *08-977*
Euphorbia pubentissima Michx. – 21; F; *08-541*

Fabaceae
***Albizia julibrissin* Durazz. ○ – 22; R; *08-828*
Amphicarpaea bracteata (L.) Fernald var. *bracteata* – 21; S; *11-154*
Amphicarpaea bracteata (L.) Fernald var. *comosa* Fassett – 21; F; *11-202*
Apios americana Medik. – 17; A; *08-730*
Astragalus canadensis L. var. *canadensis* – 3; R; *10-398*
Baptisia tinctoria (L.) Vent. – 21; I; *05-1631*
Cercis canadensis L. var. *canadensis* ○ – 21; S; *10-55*
Chamaecrista fasciculata (Michx.) Greene var. *fasciculata* – 22; R; *09-978*
Chamaecrista nictitans (L.) Moench var. *nictitans* – 22; I; *09-965*
Clitoria mariana L. var. *mariana* ○ – 5; V; *09-915*
Crotalaria sagittalis L. ○ – 8; V; *09-1071*
***Cytisus scoparius* (L.) Link ○ – 21; V; *08-228*
Desmodium ciliare (Muhl. ex Willd.) DC. ○ – 22; S; *09-993*
Desmodium glabellum (Michx.) DC. ○ – 22; F; *08-1221*
Desmodium marilandicum (L.) DC. – 22; I; *09-891*
Desmodium nuttallii (Schindl.) B.G. Schub. ○ – 22; R; *08-1219*
Desmodium paniculatum (L.) DC. var. *paniculatum* – 21; A; *08-1217*
Desmodium perplexum B.G. Schub. – 22; R; *08-984*
Desmodium rotundifolium DC. ○ – 5; R; *09-914*
Galactia volubilis (L.) Britton var. *volubilis* ○ – 8; V; *10-446*
^*Gleditsia triacanthos* L. ○ – 21; V; *08-496*
Hylodesmum glutinosum (Muhl. ex Willd.) H. Ohashi & R.R. Mill ○ – 3; R; *09-1061*
Hylodesmum nudiflorum (L.) H. Ohashi & R.R. Mill – 3; I; *08-1135*
***Kummerowia stipulacea* (Maxim.) Makino – 22; A; *08-858*
***Kummerowia striata* (Thunb.) Schindl. ○ – 22; A; *08-996*
**Lathyrus latifolius* L. ○ – 22; A; *03-03*
***Lespedeza bicolor* Turcz. – 22; F; *05-2307*
***Lespedeza cuneata* (Dum.-Cours.) G. Don ○ – 22; A; *10-463*
Lespedeza frutescens (L.) Hornem. ○ – 5; V; *08-785*
Lespedeza hirta (L.) Hornem. var. hirta – 22; S; *09-939*
Lespedeza procumbens Michx. ○ – 22; I; *08-923*
Lespedeza repens (L.) W.P.C. Barton ○ – 22; O; *09-994*
Lespedeza violacea (L.) Pers. – 5; F; *08-926*
***Lotus corniculatus* L. ○ – 22; R; *08-468*
***Medicago lupulina* L. ○ – 22; F; *09-149*
**Medicago sativa* L. – 20; I; *08-806*
***Melilotus albus* Medik. ○ – 22; F; *08-664*
***Melilotus officinalis* (L.) Pall. ○ – 22; F; *09-576*
Mimosa microphylla Dryand. ○ – 21; R; *09-778*
‡*Pisum sativum* L. ○ – 20; V; *09-1059*
***Pueraria montana* (Lour.) Merr. var. *lobata* (Willd.) Maesen & S.M. Almeida – 22; O; *08-1043*
Robinia hispida L. var. ***fertilis*** (Ashe) R.T. Clausen – 22; O; *09-726*
Robinia hispida L. var. *hispida* ○ – 22; S; *10-270*

Robinia hispida L. var. *rosea* Pursh – 5; S; *09-342*
Robinia pseudoacacia L. – 21; F; *09-358*
***Securigera varia* (L.) Lassen ○ – 22; A; *08-851*
Strophostyles umbellata (Muhl. ex Willd.) Britton ○ – 22; V; *10-476*
Stylosanthes biflora (L.) Britton, Sterns, & Poggenb. ○ – 21; R; *10-380*
**Trifolium aureum* Pollich ○ – 21; S; *09-554*
**Trifolium campestre* Schreb. ○ – 21; F; *08-358*
**Trifolium dubium* Sibth. ○ – 24; F; *08-279*
**Trifolium hybridum* L. ○ – 21; F; *08-116*
**Trifolium incarnatum* L. ○ – 21; R; *09-477*
**Trifolium pratense* L. – 21; A; *08-307*
**Trifolium repens* L. – 21; A; *08-311*
Vicia caroliniana Walter – 3; I; *09-62*
**Vicia hirsuta* (L.) Gray ○ – 22; V; *11-66*
***Vicia sativa* L. ssp. *nigra* (L.) Ehrh. ○ – 21; F; *08-167*
**Vicia villosa* Roth ssp. *varia* (Host) Corb. – 21; S; *09-535*
**Vicia villosa* Roth ssp. *villosa* ○ – 21; F; *10-274*
∞*Wisteria sinensis* (Sims) DC. ○ – 23; R; *10-77*

Fagaceae
Castanea dentata (Marshall) Borkh. ○ – 1; I; *08-718*
∞*Castanea mollissima* Blume ○ – 24; S; *08-979*
Castanea pumila (L.) Mill. – 8; I; *03-08*
Fagus grandifolia Ehrh. var. *caroliniana* (Loudon) Fernald & Rehder ○ – 2; O; *10-16*
Fagus grandifolia Ehrh. var. *grandifolia* ○ – 3; S; *10-127*
Quercus alba L. – 7; A; *08-1039*
Quercus coccinea Münchh. – 5; F; *11-147*
Quercus ilicifolia Wangenh. ○ – 8; V; *08-1236*
Quercus montana Willd. – 5; A; *08-1302*
^*Quercus palustris* Münchh. ○ – 24; V; *10-276*
^*Quercus phellos* L. ○ – 24; V; *10-277*
Quercus rubra L. var. *rubra* – 1; A; *09-425*
Quercus stellata Wangenh. – 5; S; *08-1343*
Quercus velutina Lam. – 5; I; *08-1344*

Fumariaceae
Adlumia fungosa (Aiton) Greene ex Britton, Sterns, & Poggenb. – 3; V; *09-753*
Capnoides sempervirens (L.) Borkh. – 10; S; *08-146*
Corydalis flavula (Raf.) DC. – 3; V; *J.E. Padgett 08-12* [BOON, 23 April 2008]
Dicentra canadensis (Goldie) Walp. – 3; R; *09-58*
Dicentra cucullaria (L.) Bernh. – 3; O; *09-67*

Gentianaceae
Bartonia paniculata (Michx.) Muhl. ssp. *paniculata* – 25; V; *P.D. McMillan 1* [NCU, 23 September 1992]
Bartonia virginica (L.) Britton, Sterns, & Poggenb. – 17; R; *09-06*
Gentiana austromontana J.S. Pringle & Sharp – 7; F; *08-1318*
Gentiana clausa Raf. – 3; S; *09-1044*
Gentiana decora Pollard – 7; U; *FSE-RAB*
Gentiana saponaria L. – 17; R; *09-1174*
Gentianella quinquefolia (L.) Small var. *quinquefolia* – 3; R; *09-1075*
Obolaria virginica L. – 3; R; *10-57*
Sabatia angularis (L.) Pursh ○ – 21; S; *09-827*

Geraniaceae
**Erodium cicutarium* (L.) L'Hér. – 22; R; *10-225*
Geranium carolinianum L. ○ – 21; I; *10-269*
**Geranium columbinum* L. ○ – 21; I; *09-641*
Geranium maculatum L. – 3; F; *08-185*
**Geranium molle* L. ○ – 21; I; *08-282*
∞*Geranium sanguineum* L. ○ – 24; V; *10-229*

Grossulariaceae
Ribes cynosbati L. – 3; R; *09-661*
^*Ribes hirtellum* Michx. ++ – 23; V; *09-14*
**Ribes rubrum* L. ○ – 22; S; *09-643*

Haloragaceae
Myriophyllum aquaticum* (Vell.) Verdc. ○ – 25; V; *09-472

Hamamelidaceae
Hamamelis virginiana L. var. *virginiana* – 3; F; *09-1157*

Hydrangeaceae
∞*Deutzia scabra* Thunb. ○ – 22; V; *10-232*
Hydrangea arborescens L. var. *arborescens* – 3; F; *08-1364*
†*Hydrangea arborescens* L. var. *grandiflora* Rehd. – 22; S; *09-1015*
∞*Hydrangea paniculata* Siebold ○ – 23; S; *08-1280*
^*Philadelphus inodorus* L. ○ – 23; R; *08-1077*

Hydrastidaceae
Hydrastis canadensis L. – 3; V; *09-967*

Hypericaceae
Hypericum canadense L. – 17; I; *08-1340*
Hypericum densiflorum Pursh – 17; F; *09-1171*
Hypericum gentianoides (L.) Britton, Sterns, & Poggenb. – 21; F; *07-785*
Hypericum mutilum L. var. *mutilum* – 14; F; *09-1180*
Hypericum perforatum* L. – 22; I; *09-625
Hypericum prolificum L. – 17; S; *08-946*
Hypericum punctatum Lam. – 22; F; *08-944*
Hypericum stragulum W.P. Adams & N. Robson ○ – 8; F; *08-770*
Hypericum virgatum Lam. – 17; V; *A.E. Radford 42784* [NCU, 17 July 1959]
Triadenum virginicum (L.) Raf. ○ – 25; V; *10-393*

Juglandaceae
Carya cordiformis (Wangenh.) K. Koch – 7; O; *08-790*
Carya glabra (Mill.) Sweet – 6; O; *08-721*
Carya ovalis (Wangenh.) Sarg. ○ – 7; I; *08-725*
Carya ovata (Mill.) K. Koch ○ – 7; I; *08-769*
Carya tomentosa (Lam. ex Poir.) Nutt. – 7; O; *08-865*
Juglans cinerea L. – 3; I; *08-754*
Juglans nigra L. – 3; F; *08-914*

Lamiaceae
Agastache scrophulariifolia (Willd.) Kuntze – 3; R; *08-662*
Ajuga reptans* L. ○ – 22; S; *10-66
Blephilia ciliata (L.) Benth. – 21; U; *FSE-CVS*
Blephilia hirsuta (Pursh) Benth. – 3; I; *08-481*
†*Clerodendrum trichotomum* Thunb. var. *ferrugineum* Nakai – 24; R; *11-141*
Clinopodium vulgare L. – 21; F; *09-1005*
Collinsonia canadensis L. – 3; O; *08-1103*
Cunila origanoides (L.) Britton – 7; S; *09-1032*
**Galeopsis bifida* Boenn. ○ – 21; V; *09-899*
Glechoma hederacea* L. – 22; A; *08-262
Hedeoma pulegioides (L.) Pers. – 7; O; *08-681*
Lamium amplexicaule* L. var. *amplexicaule* – 21; F; *09-02
**Lamium purpureum* L. ○ – 21; F; *08-164*
Leonurus cardiaca* L. – 22; S; *08-474
Lycopus ×sherardii Steele ○ – 21; F; *10-400*
Lycopus uniflorus Michx. – 21; O; *08-1189*
Lycopus virginicus L. – 22; I; *10-459*
**Marrubium vulgare* L. – 20; X; *A.E. Radford 44921* [BOON, 12 July 1966]
Meehania cordata (Nutt.) Britton – 3; S; *09-639*
**Melissa officinalis* L. ○ – 21; V; *10-366*
**Mentha ×gracilis* Sole (pro sp.) ○ – 21; V; *11-139*
Mentha ×piperita* L. (pro sp.) var. *piperita* – 14; I; *09-1010
**Mentha ×rotundifolia* (L.) Huds. – 21; R; *08-983*

**Mentha spicata* L. var. spicata ○ – 21; I; *10-414*
Monarda clinopodia L. – 3; F; *09-763*
Monarda didyma L. ○ – 3; S; *09-748*
Monarda fistulosa L. var. *mollis* (L.) Benth. – 21; O; *08-873*
Monarda punctata L. var. *punctata* – 21; V; *A. Mullen 7372* [UNCC, 1 September 1964]
***Nepeta cataria* L. – 22; O; *08-663*
□*Perilla frutescens* (L.) Britton var. *crispa* (Benth.) Deane ○ – 24; V; *11-240*
***Perilla frutescens* (L.) Britton var. *frutescens* ○ – 21; I; *08-1207*
Physostegia virginiana (L.) Benth. ssp. *praemorsa* (Shinners) P.D. Cantino ○ – 22; I; *08-890*
Physostegia virginiana (L.) Benth. ssp. *virginiana* – 22; R; *11-127*
**Prunella* aff. *laciniata* (L.) L. + – 21; V; *09-833*
Prunella vulgaris L. var. *lanceolata* (W.P.C. Barton) Fernald ○ – 21; F; *08-540*
***Prunella vulgaris* L. var. *vulgaris* – 22; F; *08-1080*
Pycnanthemum arkansanum Fresen. – 17; F; *08-1176*
Pycnanthemum beadlei (Small) Fernald ○ – 22; S; *09-1087*
Pycnanthemum incanum (L.) Michx. – 21; U; *FSE-RAB*
Pycnanthemum muticum (Michx.) Pers. – 17; I; *09-725*
Pycnanthemum pycnanthemoides (Leavenw.) Fernald var. *viridifolium* Fernald ○ – 22; I; *08-927*
Pycnanthemum tenuifolium Schrad. – 21; O; *08-1197*
Pycnanthemum verticillatum (Michx.) Pers. var. *verticillatum* ○ – 22; S; *09-987*
Pycnanthemum virginianum (L.) T. Durand & B.D. Jacks. ex B.L. Rob. & Fernald – 21; S; *08-572*
Salvia lyrata L. – 21; F; *08-138*
Scutellaria elliptica Muhl. ex Spreng. var. *elliptica* ○ – 7; O; *09-556*
Scutellaria incana Biehler – 7; U; *FSE-CVS*
Scutellaria integrifolia L. ○ – 21; O; *09-724*
Scutellaria lateriflora L. ○ – 14; I; *08-749*
Scutellaria saxatilis Riddell ○ – 3; S; *09-442*
Scutellaria serrata Andrews ○ – 3; S; *09-560*
Stachys appalachiana D.B. Poind. & J.B. Nelson + – 17; V; *09-739*
**Stachys byzantina* K. Koch ex Scheele ○ – 23; S; *08-1050*
***Stachys floridana* Shuttlew. ex Benth. ○ – 24; V; *09-701*
Stachys latidens Small ex Britton – 22; F; *08-451*
Teucrium canadense L. var. *canadense* – 22; I; *08-452*
Trichostema dichotomum L. – 21; I; *08-1322*

Lentibulariaceae
Utricularia subulata L. – 17; V; *09-898*

Linaceae
Linum medium (Planch.) Britton var. *texanum* (Planch.) Fernald ○ – 9; I; *10-348*
Linum striatum Walter – 17; O; *08-962*
Linum virginianum L. – 5; O; *08-783*

Linderniaceae
Lindernia dubia (L.) Pennell var. *dubia* – 25; I; *08-846*

Linnaeaceae
∞Abelia ×grandiflora (André) Rehder ○ – 23; V; *10-423*

Lythraceae
Cuphea viscosissima Jacq. – 22; R; *09-995*
†Lagerstroemia indica L. – 23; V; *10-440*
***Lythrum salicaria* L. ○ – 22; R; *10-458*

Malvaceae
**Abutilon theophrasti* Medik. – 20; S; *08-816*
∞Alcea rosea L. ○ – 22; R; *10-387*
ΔHibiscus moscheutos L. – 21; V; *09-1128*
†Hibiscus moscheutos L. cv. 'Disco Belle' – 22; V; *11-233*
**Hibiscus syriacus* L. ○ – 24; I; *08-1057*
**Malva moschata* L. ○ – 22; R; *08-888*
**Malva neglecta* Wallr. – 22; I; *08-346*
**Malva sylvestris* L. ○ – 22; R; *11-232*
Tilia americana L. var. *americana* ○ – 3; R; *11-70*
Tilia americana L. var. *heterophylla* (Vent.) Loudon – 3; F; *08-755*

Melastomataceae
Rhexia mariana L. var. *mariana* – 21; I; *09-986*

Menispermaceae
Menispermum canadense L. ○ – 3; V; *10-139*

Menyanthaceae
Menyanthes trifoliata L. – 18; V; *P.D. McMillan 7* [NCU, 28 August 1994]
**Nymphoides peltata* (S.G. Gmel.) Kuntze ++ – 25; R; *13-197*

Molluginaceae
**Mollugo verticillata* L. ○ – 20; O; *08-1143*

Montiaceae
Claytonia caroliniana Michx. – 3; A; *08-04*
Claytonia virginica L. var. *acutiflora* DC. ○ – 3; I; *08-10*
Claytonia virginica L. var. *virginica* – 3; A; *08-10A*
Phemeranthus teretifolius (Pursh) Raf. – 9; R; *09-771*

Moraceae
***Broussonetia papyrifera* (L.) L'Hér. ex Vent. ○ – 22; V; *10-234*
‡Fatoua villosa (Thunb.) Nakai – 24; V; *05-1628*
Maclura pomifera (Raf.) C.K. Schneid. – 23; V; *05-2267*
***Morus alba* L. ○ – 22; V; *10-407*
Morus rubra L. ○ – 3; I; *08-1010*

Myricaceae
Comptonia peregrina (L.) J.M. Coult. – 8; S; *05-1746*

Nyctaginaceae
∞Mirabilis jalapa L. cv. 'Broken Colors' ○ – 24; V; *06-229*

Nyssaceae
Nyssa sylvatica Marshall – 7; A; *08-864*

Oleaceae
Chionanthus virginicus L. – 10; S; *08-129*
**Forsythia viridissima* Lindl. ○ – 23; O; *09-49*
Fraxinus americana L. – 7; F; *08-720*
ΔFraxinus pennsylvanica Marshall – 24; V; *08-907*
***Ligustrum obtusifolium* Siebold & Zuccarini var. *suave* (Kitagawa) H. Hara ○ – 22; V; *10-308*
***Ligustrum sinense* Lour. ○ – 22; I; *09-525*
**Syringa vulgaris* L. ○ – 23; R; *09-127*

Onagraceae
Chamerion platyphyllum (Daniels) Á. Löve & D. Löve ○ – 22; V; *09-830*
Circaea alpina L. ssp. *alpina* ○ – 7; S; *09-663*
Circaea canadensis (L.) Hill ssp. *canadensis* – 3; O; *08-564*
Epilobium coloratum Biehler – 22; F; *09-943*
Epilobium leptophyllum Raf. – 17; I; *08-1175*
Gaura biennis L. – 22; O; *08-889*
Ludwigia alternifolia L. – 25; O; *08-495*
Ludwigia palustris (L.) Elliott – 14; O; *09-960*
Oenothera biennis L. – 21; F; *08-1148*
Oenothera fruticosa L. var. *fruticosa* – 17; O; *09-484*
Oenothera nutans G.F. Atk. & Bartlett ○ – 21; V; *11-131*
Oenothera parviflora L. ○ – 22; R; *08-1004*
∞Oenothera speciosa Nutt. ○ – 22; R; *11-117*
Oenothera tetragona Roth var. *tetragona* ○ – 21; I; *09-552*

Orobanchaceae
Agalinis decemloba (Greene) Pennell ○ – 21; V; *09-955*
Agalinis purpurea (L.) Pennell – 17; O; *09-950*

Agalinis tenuifolia (Vahl) Raf. var. *tenuifolia* ○ – 22; V; *I.W. Carpenter 542* [BOON, 29 August 1975]
Aureolaria laevigata (Raf.) Raf. – 7; O; *08-821*
Aureolaria virginica (L.) Pennell ○ – 3; V; *08-486*
Castilleja coccinea (L.) Spreng. – 21; V; *A.E. Radford 34178* [NCU, 30 May 1958]
Conopholis americana (L.) Wallr. – 3; F; *08-149*
Epifagus virginiana (L.) W.P.C. Barton ○ – 3; O; *09-1170*
Melampyrum lineare Desr. var. *americanum* (Michx.) Beauverd ○ – 8; S; *09-969*
Melampyrum lineare Desr. var. *latifolium* W.P.C. Barton – 22; F; *09-561*
Orobanche uniflora L. ○ – 3; S; *09-339*
Pedicularis canadensis L. – 21; S; *09-204*

Oxalidaceae
**Oxalis corniculata* L. ○ – 24; S; *10-263*
Oxalis dillenii Jacq. – 21; F; *10-262*
Oxalis florida Salisb. ○ – 21; S; *10-215*
Oxalis grandis Small ○ – 3; S; *10-268*
Oxalis stricta L. – 21; F; *10-227*
Oxalis violacea L. ○ – 3; I; *08-273*

Papaveraceae
‡*Papaver rhoeas* L. ○ – 22; V; *08-793*
Sanguinaria canadensis L. – 3; O; *09-36*

Parnassiaceae
Parnassia asarifolia Vent. – 17; S; *08-1225*
Parnassia grandifolia DC. – 17; R; *09-1051*

Passifloraceae
Passiflora lutea L. var. *lutea* ○ – 9; V; *09-1076*

Paulowniaceae
***Paulownia tomentosa* (Thunb.) Siebold & Zuccarini ex Steud. ○ – 22; S; *08-981*

Penthoraceae
Penthorum sedoides L. – 14; V; *A.E. Radford 40972* [NCU, 27 September 1958]

Phrymaceae
**Mazus pumilus* (Burm. f.) Steenis ○ – 24; V; *10-462*
Mimulus ringens L. var. *ringens* – 17; F; *08-938*
Phryma leptostachya L. var. *leptostachya* – 3; I; *08-788*

Phytolaccaceae
Phytolacca americana L. – 21; F; *08-838*

Plantaginaceae
**Antirrhinum majus* L. ○ – 24; R; *08-835*
Callitriche heterophylla Pursh var. *heterophylla* ○ – 25; V; *10-281*
Chelone cuthbertii Small – 17; I; *08-1224*
Chelone glabra L. ○ – 16; I; *08-1277*
Chelone lyonii Pursh – 11; V; *09-1173*
Chelone obliqua L. ○ – 18; V; *09-996*
**Cymbalaria muralis* (L.) G. Gaertn., B. Mey., & Scherb. ssp. *muralis* – 24; V; *03-15*
**Digitalis grandiflora* Mill. + – 25; R; *10-306*
**Digitalis purpurea* L. ○ – 23; S; *10-304*
†*Digitalis purpurea* L. cv. 'Campanulata' – 23; V; *10-204*
Gratiola neglecta Torr. ○ – 25; I; *08-843*
Gratiola viscidula Pennell – 25; R; *09-1158*
‡*Linaria maroccana* Hook. f. + – 21; V; *08-1232*
**Linaria vulgaris* Mill. ○ – 22; I; *08-857*
Nuttallanthus canadensis (L.) D.A. Sutton ○ – 21; V; *09-398*
Penstemon laevigatus Aiton ○ – 3; R; *10-272*
***Plantago aristata* Michx. – 21; S; *08-539*
***Plantago lanceolata* L. – 21; F; *08-1022*
**Plantago major* L. ○ – 22; O; *08-1210*
Plantago rugelii Decne. – 21; F; *08-529*
Plantago virginica L. – 21; O; *08-117*
Veronica americana Schwein. ex Benth. – 16; R; *09-831*
**Veronica arvensis* L. ○ – 21; F; *08-108*
**Veronica chamaedrys* L. – 22; V; *09-134*
***Veronica hederifolia* L. ○ – 22; R; *11-03*
**Veronica officinalis* L. – 21; F; *08-301*
Veronica peregrina L. var. *peregrina* – 21; F; *09-138*
**Veronica persica* Poir. ○ – 20; R; *10-130*
**Veronica serpyllifolia* L. var. *serpyllifolia* – 21; F; *08-107*
Veronicastrum virginicum (L.) Farw. – 22; S; *09-818*

Platanaceae
Platanus occidentalis L. var. *occidentalis* – 15; I; *08-297*

Podostemaceae
Podostemum ceratophyllum Michx. – 13; I; *08-462*

Polemoniaceae
Phlox carolina L. ○ – 22; R; *11-119*
Phlox glaberrima L. – 22; I; *09-587*
Phlox maculata L. var. *pyramidalis* (Sm.) Wherry – 14; S; *08-524*
Phlox ovata L. ○ – 22; S; *10-271*
Phlox paniculata L. ○ – 22; S; *08-885*
Phlox stolonifera Sims ○ – 3; S; *09-97*
^*Phlox subulata* ○ – 22; I; *09-44*

Polygalaceae
Polygala ambigua Nutt. – 22; R; *09-920*
Polygala cruciata L. var. *aquilonia* Fernald & B.G. Schub. – 17; S; *08-1227*
Polygala curtissii A. Gray – 22; S; *09-938*
Polygala sanguinea L. – 21; O; *07-787*

Polygonaceae
**Fagopyrum esculentum* Moench ○ – 19; V; *09-1095*
**Fallopia convolvulus* (L.) Á. Löve – 20; O; *10-415*
Fallopia cristata (Engelm. & A. Gray) Holub ○ – 21; S; *08-948*
Fallopia scandens (L.) Holub – 21; A; *08-1152*
Persicaria hydropiper (L.) Opiz – 14; F; *08-1117*
***Persicaria longiseta* (Bruijn) Kitag. – 21; F; *08-1040*
***Persicaria maculosa* Gray – 21; F; *08-1006*
Persicaria pensylvanica (L.) M. GóMez – 14; O; *10-404*
***Persicaria perfoliata* (L.) H. Gross + – 21; O; *10-417*
Persicaria punctata (Elliott) Small – 14; I; *08-1158*
Persicaria sagittata (L.) H. Gross ex Nakai – 21; F; *11-164*
Persicaria virginiana (L.) Gaertn. – 3; I; *08-1014*
**Polygonum aviculare* L. ssp. *aviculare* – 20; F; *08-661*
**Polygonum aviculare* L. ssp. *neglectum* (Besser) Arcang. ○ – 22; R; *10-457*
Polygonum buxiforme Small ○ – 22; S; *10-273*
Polygonum tenue Michx. ○ – 12; V; *09-1026*
***Reynoutria japonica* Houtt. ○ – 22; O; *08-855*
***Rumex acetosella* L. – 21; F; *08-281*
***Rumex crispus* L. ssp. *crispus* – 21; O; *09-435*
***Rumex obtusifolius* L. – 21; F; *08-1076*

Portulacaceae
**Portulaca grandiflora* Hook. ○ – 24; R; *10-363*
**Portulaca oleracea* L. ○ – 22; O; *10-413*

Primulaceae
Lysimachia ciliata L. – 21; F; *08-489*
**Lysimachia clethroides* Duby ○ – 22; R; *10-364*
Lysimachia lanceolata Walter – 10; S; *09-772*
***Lysimachia nummularia* L. ○ – 21; O; *09-553*
Lysimachia ×producta (Gray) Fern. – 17; R; *09-685*

Lysimachia quadrifolia L. – 7; F; *08-387*
Lysimachia terrestris (L.) Britton, Sterns, & Poggenb. – 17; O; *08-501*

Ranunculaceae
Aconitum uncinatum L. – 2; R; *09-889*
Actaea podocarpa DC. – 3; V; *09-1023*
Actaea racemosa L. – 2; O; *08-1030*
Anemone acutiloba (DC.) G. Lawson – 3; I; *08-17*
Anemone americana (DC.) H. Hara ○ – 3; V; *10-179*
Anemone lancifolia Pursh – 3; V; *10-181*
Anemone minima DC. ○ – 3; S; *10-62*
Anemone quinquefolia L. ○ – 3; O; *10-29*
Anemone virginiana L. var. *virginiana* – 3; O; *08-493*
Aquilegia canadensis L. – 3; O; *08-137*
∞*Aquilegia vulgaris* L. ○ – 22; V; *09-180*
Caltha palustris L. var. ***palustris*** – 18; U; *NCNHP*
******Clematis terniflora* DC. ○ – 23; O; *08-837*
Clematis viorna L. – 21; F; *09-558*
Clematis virginiana L. – 21; A; *08-735*
Coptis trifolia (L.) Salisb. var. ***groenlandica*** (Oeder) Fassett – 18; V; *09-248*
Delphinium exaltatum Aiton – 7; X; *P.O. Schallert 8672* [DUKE, 5 July 1924]
Delphinium tricorne Michx. ○ – 3; V; *09-167*
Ranunculus abortivus L. – 21; O; *08-99*
*****Ranunculus acris* L. – 21; I; *09-410*
Ranunculus allegheniensis Britton – 2; O; *08-178*
******Ranunculus bulbosus* L. ○ – 21; O; *07-138*
Ranunculus carolinianus DC. – 15; V; *A.E. Radford 32733* [NCU, 2 May 1958]
Ranunculus hispidus Michx. – 3; O; *10-170*
*****Ranunculus parviflorus* L. ○ – 21; V; *10-87*
Ranunculus recurvatus Poir. var. *recurvatus* – 14; F; *08-94*
*****Ranunculus repens* L. – 21; F; *08-267*
Thalictrum clavatum DC. – 16; O; *08-101*
Thalictrum coriaceum (Britton) Small ○ – 3; V; *10-278*
Thalictrum dioicum L. – 3; I; *09-396*
Thalictrum macrostylum Small & A. Heller – 17; S; *08-569*
Thalictrum pubescens Pursh var. *pubescens* – 21; S; *09-636*
Thalictrum revolutum DC. – 21; F; *09-456*
Trautvetteria caroliniensis (Walter) Vail var. *caroliniensis* – 16; F; *09-568*
Xanthorhiza simplicissima Marshall – 14; A; *09-557*

Rhamnaceae
Ceanothus americanus L. var. *americanus* – 22; I; *08-1204*

Rosaceae
Agrimonia gryposepala Wallr. – 17; I; *09-799*
Agrimonia parviflora Aiton – 21; F; *08-799*
Agrimonia pubescens Wallr. – 17; O; *08-732*
Agrimonia rostellata Wallr. – 3; I; *08-792*
Amelanchier arborea (F. Michx.) Fernald – 5; O; *09-481*
Amelanchier laevis Wiegand – 7; I; *08-208*
*****Aphanes australis* Rydb. ○ – 21; R; *10-214*
Aronia arbutifolia (L.) Pers. – 17; O; *09-977*
Aronia melanocarpa (Michx.) Elliott – 17; O; *09-905*
Aronia prunifolia (Marshall) Rehder – 17; S; *09-1105*
Aruncus dioicus (Walter) Fernald var. *dioicus* – 3; I; *09-567*
∞*Chaenomeles speciosa* (Sweet) Nakai ○ – 23; R; *09-46*
†*Cotoneaster* aff. *horizontalis* Decne. – 24; V; *08-476*
Crataegus chrysocarpa Ashe var. *dodgei* (Ashe) E.J. Palmer + – 21; R; *10-141*
Crataegus coccinea L. – 21; V; *08-272*
Crataegus crus-galli L. ○ – 21; R; *09-1053*
Crataegus intricata Lange var. *biltmoreana* (Beadle) R.W. Lance ○ – 21; V; *10-143*
Crataegus iracunda Beadle ○ – 3; O; *08-1162*
Crataegus macrosperma Ashe – 7; O; *08-211*
^*Crataegus phaenopyrum* (L. f.) Medik. ○ – 24; V; *06-253*
Crataegus pruinosa (H.L. Wendl.) K. Koch ○ – 21; I; *08-1161*
Crataegus punctata Jacq. ○ – 10; O; *08-361*
Fragaria virginiana Mill. – 21; F; *08-123*
Geum canadense Jacq. – 3; F; *08-703*
Geum donianum (Trattinick) Weakley & Gandhi – 3; V; *A.E. Radford 32723* [NCU, 2 May 1958]
Geum vernum (Raf.) Torr. & A. Gray ○ – 21; R; *08-236*
Geum virginianum L. – 3; O; *09-990*
Gillenia trifoliata (L.) Moench – 22; F; *08-363*
∞*Kerria japonica* (L.) DC. ○ – 23; V; *10-247*
Malus angustifolia (Aiton) Michx. ○ – 21; V; *08-197*
†*Malus* cf. *sieboldii* (Regel) Rehder – 21; V; *08-1317*
Malus coronaria (L.) Mill. – 21; F; *08-1194*
*****Malus pumila* Mill. – 21; F; *08-657*
Physocarpus opulifolius (L.) Maxim. var. *opulifolius* – 14; O; *08-580*
Potentilla canadensis L. var. *canadensis* – 21; F; *08-184*
******Potentilla indica* (Andrews) Th. Wolf ○ – 24; O; *09-921*
Potentilla norvegica L. ○ – 21; O; *09-752*
******Potentilla recta* L. ○ – 21; O; *09-566*
Potentilla simplex Michx. – 21; F; *08-135*
*****Poterium sanguisorba* L. ssp. *muricatum* (Spach) Rouy ○ – 21; V; *10-128*
Prunus americana Marshall ○ – 15; I; *08-449*
*****Prunus avium* L. ○ – 22; S; *10-56*
*****Prunus cerasifera* Ehrh. ○ – 21; R; *10-356*
†*Prunus domestica* L. – 24; R; *08-982*
∞*Prunus glandulosa* Thunb. ○ – 23; V; *09-129*
Prunus pensylvanica L. f. – 21; U; *FSE-CVS*
*****Prunus persica* (L.) Batsch ○ – 22; S; *09-383*
Prunus serotina Ehrh. var. *serotina* – 3; F; *09-369*
†*Prunus serrulata* Lindl. – 24; I; *12-03*
*****Prunus subhirtella* Miq. ○ – 22; R; *10-30*
∞*Prunus tomentosa* Thunb. + – 22; V; *11-05*
*****Pyracantha coccinea* M. Roem. ○ – 21; R; *09-434*
□*Pyrus calleryana* Decne. ○ – 22; R; *10-53*
†*Pyrus communis* L. – 24; V; *09-66*
Rosa carolina L. ssp. *carolina* – 22; I; *09-565*
*****Rosa luciae* Franch. & Rochebr. ex Crép. ○ – 22; F; *08-477*
******Rosa multiflora* Thunb. ex Murray – 21; A; *09-408*
Rosa palustris Marshall – 17; O; *08-459*
†*Rosa* sp. – 23; V; *09-689*
Rubus allegheniensis Porter – 21; I; *09-479*
Rubus canadensis L. – 17; U; *FSE-CVS*
Rubus dalibarda L. – 18; S; *09-541*
Rubus flagellaris Willd. – 22; O; *09-371*
Rubus hispidus L. – 18; A; *08-561*
Rubus occidentalis L. – 21; F; *08-478*
Rubus odoratus L. ○ – 3; R; *08-716*
Rubus pensilvanicus Poir. ○ – 21; F; *06-190*
******Rubus phoenicolasius* Maxim. ○ – 21; I; *06-192*
Sanguisorba canadensis L. – 17; I; *08-1168*
Sorbus americana Marshall – 10; I; *09-888*
Spiraea alba Du Roi – 17; I; *08-503*
Spiraea corymbosa Raf. – 7; U; *NCNHP*
******Spiraea japonica* L. f. var. *fortunei* (Planch.) Rehder ○ – 22; F; *08-485*
Spiraea latifolia (Aiton) Borkh. – 17; I; *08-826*
∞*Spiraea prunifolia* Siebold & Zuccarini ○ – 22; S; *09-30*
Spiraea tomentosa L. – 21; F; *08-533*
∞*Spiraea* ×*vanhouttei* (Briot) Carrière ○ – 22; R; *10-161*

Rubiaceae
Diodia teres Walter ○ – 21; I; *08-1065*
Diodia virginiana L. ○ – 21; R; *09-1074*

**Galium anglicum* Huds. ○ – 24; V; *07-141*
Galium aparine L. – 21; A; *09-402*
Galium asprellum Michx. – 17; I; *08-1183*
Galium circaezans Michx. var. *circaezans* – 7; F; *08-684*
Galium latifolium Michx. – 7; F; *08-702*
**Galium mollugo* L. var. *erectum* (Huds.) Domin – 21; R; *09-438*
**Galium mollugo* L. var. *mollugo* – 21; I; *06-183*
***Galium pedemontanum* (Bellardi) All. ○ – 21; F; *08-170*
Galium pilosum Aiton var. *pilosum* – 5; I; *08-894*
Galium tinctorium (L.) Scop. var. *floridanum* Wiegand – 17; O; *08-1278*
Galium tinctorium (L.) Scop. var. *tinctorium* – 17; O; *08-504*
Galium triflorum Michx. – 3; F; *08-480*
Houstonia caerulea L. – 7; F; *08-142*
Houstonia purpurea L. var. *purpurea* – 7; F; *08-348*
Houstonia pusilla Schoepf ○ – 21; V; *10-28*
Houstonia serpyllifolia Michx. – 18; O; *09-43*
Mitchella repens L. – 8; F; *11-01*

Rutaceae
Ptelea trifoliata L. var. *trifoliata* – 15; S; *08-950*

Salicaceae
***Populus alba* L. ○ – 21; R; *09-1178*
†Populus ×canadensis Moench (pro sp.) – 24; V; *09-652*
**Populus ×canescens* (Aiton) Sm. (pro sp.) – 22; S; *06-61*
Populus grandidentata Michx. – 4; R; *09-1106*
**Populus ×jackii* Sarg. ○ – 15; I; *08-970*
†Populus maximowiczii A. Henry – 24; V; *10-148*
†Populus nigra L. – 24; R; *09-1130*
†Populus simonii Carrière – 24; V; *08-932*
∞Salix babylonica L. ○ – 23; R; *09-505*
Salix humilis Marshall – 10; S; *12-47*
Salix nigra Marshall – 14; F; *08-268*
Salix sericea Marshall – 17; F; *08-945*

Santalaceae
Comandra umbellata (L.) Nutt. var. *umbellata* ○ – 5; V; *10-157*
Phoradendron leucarpum (Raf.) Reveal & M.C. Johnst. ssp. *leucarpum* – 5; R; *06-01*
Pyrularia pubera Michx. – 3; O; *08-194*

Sapindaceae
∞Acer ginnala Maxim. ○ – 22; V; *10-182*
Acer negundo L. var. *negundo* ○ – 15; S; *08-745*
Acer nigrum Michx. f. ○ – 15; V; *09-422*
Acer pensylvanicum L. – 1; O; *08-124*
†Acer platanoides L. – 24; R; *10-302*
Acer rubrum L. var. *rubrum* – 2; F; *08-1347*
Acer rubrum L. var. *trilobum* Torr. & A. Gray ex K. Koch ○ – 15; R; *09-473*
ΔAcer saccharinum L. – 24; I; *10-241*
Acer saccharum Marshall – 2; I; *09-644*
Aesculus flava Sol. – 3; F; *08-453*

Saxifragaceae
Boykinia aconitifolia Nutt. – 14; I; *08-568*
Chrysosplenium americanum Schwein. ex Hook. ○ – 16; V; *10-54*
Heuchera americana L. – 2; V; *A.E. Radford 38392* [NCU, 31 July 1958]
Heuchera hispida Pursh ○ – 3; I; *08-350*
Heuchera villosa Michx. var. *villosa* – 10; F; *08-704*
Hydatica petiolaris (Raf.) Small – 10; S; *08-171*
Micranthes caroliniana (A. Gray) Small – 11; I; *09-240*
Micranthes micranthidifolia (Haw.) Small ○ – 16; S; *09-389*
Micranthes virginiensis (Michx.) Small – 3; I; *08-130*
Mitella diphylla L. – 3; I; *09-163*
Tiarella cordifolia L. – 3; I; *09-392*

Scrophulariaceae
**Buddleja davidii* Franch. ○ – 22; R; *09-922*
Scrophularia marilandica L. – 3; S; *08-685*
**Verbascum blattaria* L. ○ – 22; F; *08-475*
**Verbascum phlomoides* L. ○ – 22; V; *10-362*
***Verbascum thapsus* L. – 22; F; *08-667*

Simaroubaceae
***Ailanthus altissima* (Mill.) Swingle ○ – 22; S; *08-1102*

Solanaceae
**Datura stramonium* L. ○ – 20; O; *08-805*
**Lycium chinense* Mill. ○ – 23; S; *09-1137*
‡Nicotiana tabacum L. ○ – 20; R; *09-1070*
∞Petunia ×hybrida Vilm. ○ – 22; V; *10-445*
Physalis grisea (Waterf.) M. Martínez – 20; I; *09-1055*
Physalis heterophylla Nees ○ – 22; R; *09-749*
Physalis longifolia Nutt. var. *subglabrata* (Mack. & Bush) Cronquist ○ – 21; R; *08-808*
Physalis pubescens L. var. *integrifolia* (Dunal) Waterf. ○ – 22; R; *10-419*
Solanum carolinense L. var. *carolinense* – 21; F; *11-168*
***Solanum dulcamara* L. – 21; O; *05-2298*
‡Solanum lycopersicum L. ○ – 24; V; *11-242*
Solanum ptychanthum Dunal ○ – 21; F; *08-811*
‡Solanum tuberosum L. ○ – 24; V; *08-443*

Styracaceae
Halesia tetraptera J. Ellis ○ – 3; I; *09-114*

Tropaeolaceae
‡Tropaeolum majus L. ○ – 24; V; *10-224*

Ulmaceae
Ulmus rubra Muhl. ○ – 15; I; *08-1122*

Urticaceae
Boehmeria cylindrica (L.) Sw. – 14; O; *08-747*
Laportea canadensis (L.) Wedd. – 3; I; *09-728*
Parietaria pensylvanica Muhl. ex Willd. – 7; U; *NCNHP*
Pilea pumila (L.) A. Gray – 18; O; *11-229*

Valerianaceae
Valerianella radiata (L.) Dufr. ○ – 21; O; *08-285*

Verbenaceae
Verbena hastata L. – 14; S; *08-542*
Verbena urticifolia L. – 21; F; *09-1067*

Violaceae
**Viola arvensis* Murray ○ – 21; I; *10-46*
Viola bicolor Pursh – 22; S; *09-20*
Viola blanda Willd. – 3; O; *09-117*
Viola canadensis L. var. *canadensis* – 3; O; *09-172*
Viola cucullata Aiton – 16; O; *08-204*
Viola hastata Michx. – 2; I; *09-35*
Viola hirsutula Brainerd – 2; O; *09-388*
Viola incognita Brainerd – 3; X; *A.E. Radford 32732* [NCU, 2 May 1958]
Viola labradorica Schrank – 21; V; *09-21*
Viola lanceolata L. – 17; U; *FSE-CVS*
Viola macloskeyi F.E. Lloyd var. *pallens* (Banks ex DC.) C.L. Hitchc. – 17; O; *08-202*
Viola palmata L. – 7; F; *10-166*
Viola pedata L. var. *pedata* – 21; O; *09-86*
Viola pensylvanica Michx. ○ – 3; F; *08-162*
Viola primulifolia L. – 21; O; *08-163*
Viola pubescens Aiton – 3; R; *10-168*
Viola rotundifolia Michx. – 2; F; *08-141*
Viola sagittata Aiton var. *ovata* (Nutt.) Torr. & A. Gray – 21; F; *09-87*
Viola sagittata Aiton var. *sagittata* – 21; I; *09-253*
Viola septentrionalis Greene ○ – 1; V; *10-198*
Viola sororia Willd. var. *missouriensis* (Greene) L.E. McKinney – 14; I; *10-63*

Viola sororia Willd. var. *sororia* – 21; F; *09-18A*
Viola striata Aiton – 22; F; *08-354*
Viola subsinuata Greene – 5; R; *09-177*
**Viola tricolor* L. ○ – 20; R; *10-102*

Vitaceae
Muscadinia rotundifolia (Michx.) Small var. *rotundifolia* ○ – 7; V; *09-205*
Parthenocissus quinquefolia (L.) Planch. – 21; F; *11-189*
**Parthenocissus tricuspidata* (Siebold & Zuccarini) Planch. ○ – 22; R; *10-264*
Vitis aestivalis Michx. var. *aestivalis* – 7; O; *J.L. Michael 578* [NCU, 23 May 1968]
Vitis aestivalis Michx. var. *bicolor* Deam ○ – 7; S; *11-239*
Vitis labrusca L. – 21; F; *08-237*
Vitis vulpina L. ○ – 14; F; *08-385*

CONCLUSIONS

Despite severe anthropogenic influence and a heavily modified landscape, Alleghany County has a wealth of floristic diversity. This is also quite remarkable in light of the very small size of this study area. Part of this high taxon diversity can be attributed to the rugged topography (inducing variable microclimates), disturbance (high exotic richness), and the geographic positioning of the county, which adds a physiographic "ecotone" effect (coupling of Mountain and Piedmont habitats). Ultimately, this flora is the most comprehensive survey for Alleghany County at present, but can in no way be considered complete due to human factors (missed taxa) and the dynamic nature of vegetation patterns (loss and gain of taxa over time). The usage of contemporary techniques, particularly the digital documentation and georeferencing aspect of this project, will hopefully serve as a model for making additional floristic projects more readily available, dynamic, and useful.

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